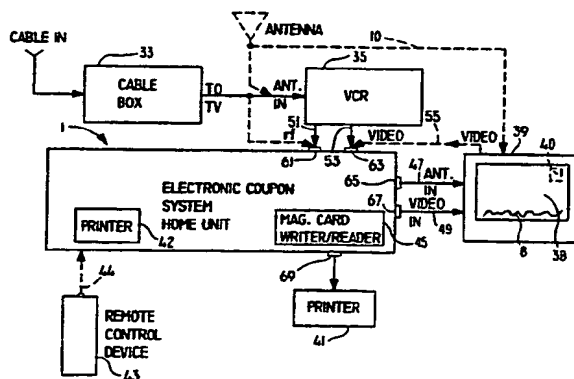




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<b>(21) International Application Number:</b> PCT/US93/04428 <b>(22) International Filing Date:</b> 11 May 1993 (11.05.93)  <b>(30) Priority data:</b> 07/882,214      12 May 1992 (12.05.92)      US 07/887,450      21 May 1992 (21.05.92)      US 07/932,799      20 August 1992 (20.08.92)      US  <b>(71)(72) Applicant and Inventor:</b> HOLMAN, Michael, J. [US/ US]; 45 Ranch View Road, Rolling Hills Estate, CA 90274 (US).  <b>(74) Agents:</b> HOLLINGSWORTH, Don, A. et al.; Ladas & Parry, 5670 Wilshire Boulevard, Suite 2100, Los Angeles, CA 90036-5679 (US).		<b>(81) Designated States:</b> CA, JP, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).  <b>Published</b> <i>With international search report.</i>

**(54) Title:** ELECTRONIC REDEEMABLE COUPON SYSTEM**(57) Abstract**

An electronic redeemable coupon generating system includes: an encoder for encoding coupon-related data in a television signal transmission, the transmission including picture information for display on a television monitor screen; a decoder (1) for receiving the television signal transmission and extracting the coupon-related data therefrom; and a recording device (41) for the coupon-related data therefrom; and a recording medium for subsequent readout and redemption. In a preferred embodiment of the invention, the decoder includes a display driver (39) for displaying indicia (8) on a television monitor screen responsive to coupon-related data being encoded in the television signal transmission. Upon observing the indicia on the television monitor screen, the user can manually and selectively extract the coupon-related data from the television signal transmission. After an optical editing function, the extracted coupon-related data is stored on a recording medium such as a magnetically striped card. The decoder may be part of the standard circuitry of a closed-caption adapted or modified television set. Provisions are made for electronically entering paper coupon information into the system.

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## ELECTRONIC REDEEMABLE COUPON SYSTEM

### BACKGROUND OF THE INVENTION

#### Field of the Invention

5 This invention relates to redeemable coupons, and more particularly to a system for generating electronic redeemable coupons. Coupon-related data is encoded in a television signal transmission and decoded in a home unit for later redemption by the user.

#### Brief Description of the Prior Art

10 The use of redeemable coupons is very old. For decades advertisers have issued or published printed coupons which can be taken to a redemption center, such as a retail store, and redeemed for some value or as a discount toward the purchase of some item. While this  
15 method has proven to be effective, there are many disadvantages to the process for the user, for the redemption center or retail store, as well as for the advertisers themselves.

20 The problems associated with clipping coupons by a user are manifold. First, a user must purchase or otherwise obtain a publication and search through such publication for coupons which would be meaningful or useful to the user. The user then must cut out such coupons, being of various physical sizes, leaving a pile of scrap  
25 paper and holes in the pages of the publication. Some advertisers use handouts or flyers which make the searching job easier, but there is still the problem of cutting out

the coupons which is annoying and a waste of valuable time. Being of different sizes and pertaining to different types of products, the user must separate the coupons into product categories and band the coupons together as best as he or she can. The user then stuffs these sorted coupons into a pocket or purse and is off to the market. Upon arrival at a particular retail outlet at which at least some of the coupons are redeemable, the user usually fumbles through the groups of coupons and attempts to find the products in the store, and if they are not familiar with the layout of the store, this could again constitute a gross misuse of valuable time. Furthermore, since each store lays out their products differently, in order to redeem some coupons, the user may find it necessary to search out the desirable item in a number of stores. Finally, upon gathering the product into the pushcart, the user has yet another manipulation to make, i.e. he or she must select the coupons for which the products have been purchased from a number of coupons the user brought to the store initially.

This then leads to the next problem associated with coupon redemption, in that the store clerk must sort through the coupons, ensuring that they relate to the products being purchased and that the expiration dates are appropriate, and then enter the discount information in the computer (modernly, by a bar code scanner). This part of the redemption process takes valuable time away from the checkout clerk and irritates other people waiting in the checkout line. After the customer leaves, the retail store is still not relieved from further expenditure of valuable employee time, since the accumulated coupons in the retail store must now be sorted by manufacturer, tallied on a score sheet or in a computer or submitted to a brokerage house, and sent off to the manufacturer for retail store reimbursement.

Insofar as the manufacturer of the product is concerned, while there is direct evidence that people are reading their ads and using coupons, and although the number of coupons coming back to the manufacturer indicates some level of success in advertising, there is very little additional marketing information that can be derived from this type of coupon redemption scheme. Furthermore, any information the manufacturer does obtain is old information, the total processing of a coupon from publication to reimbursement to the retail stores taking perhaps several weeks. Additionally, the manufacturer has no information whatsoever about the nature of the customer, their age, sex, occupation, family environment, place of residence, or other information which would be of great value to the manufacturer in planning future advertising programs. Since each coupon is submitted anonymously, the manufacturer has no idea of how to reach that person again for arousing interest in related products. While some demographic information can be obtained by noting the geographical regions in which the coupons were redeemed, the lack of any specific information as to the nature of the purchaser leads many manufacturers to conduct separate marketing surveys which are extremely costly and time consuming. Some manufacturers are known to have spent millions of dollars to gather such information.

The television industry, contrasted to the printed media industry, is unable to offer its viewers (potential customers) any coupons which can be taken to the retail store for redemption. The best that an advertiser can do in television is to simply make the public aware of a sale on a particular item or line of items produced by a certain manufacturer. In some instances, telephone numbers and/or addresses are given to the viewing public, and if the viewer wishes to use up a lot of valuable time, he or she can make the telephone call and/or write the letter to gain access to additional information and perhaps coupons which can be redeemed for products or discounts on products.

Again, however, the general public is generally not willing to make the extra effort to jot down a telephone number and make a call which likely would end up in a "sales job" from the person at the other end of the line, and would, to an even greater extent, resist the suggestion to write a letter to the manufacturer for product and discount pricing information, assuming that a pencil and paper is always at hand and that the name and address to which the viewer is to write is presented on the screen long enough to copy it down.

It can therefore be appreciated that there are many problems associated with existing coupon redemption programs, and the drawbacks of these systems are numerous and disliked by all three entities involved, the consumer, the redemption center (retail outlet store), and the manufacturer. There is therefore a great need for a redeemable coupon system which would: (1) significantly decrease the amount of time and effort a consumer expends in locating, clipping, and assembling the coupons; (2) give the consumer guidance at the redemption center as to the availability of the product to which the coupon pertains and the location in the store of that product; (3) enable the redemption center to more quickly and automatically credit the coupon amounts against the products being purchased and reduce the time and effort in organizing and reporting the coupons which have been redeemed; (4) enable the manufacturer to get quick results in the amount of usage of the coupons, the demographics of usage, and detailed information about the consumer including name, address, interests, and other data which would permit the manufacturer to access the value of the coupon distributing effort and to make and/or modify future plans for additional advertising or sale; and (5) establish firm controls over excessive or non-intended use of coupons.

The present invention fulfills these various needs.

SUMMARY OF THE INVENTION

The present invention overcomes the deficiencies and disadvantages of current coupon redemption programs outlined above by providing an electronic redeemable coupon  
5 generating system which comprises an encoding means for encoding coupon-related data in a television signal transmission, the transmission including picture information for display on a television monitor screen; decoding means for receiving the television signal  
10 transmission including means for extracting the coupon-related data therefrom; and recording means for recording the extracted coupon-related data on a recording medium for subsequent readout and redemption.

In a preferred embodiment of the invention, the  
15 decoding means includes means for displaying indicia on a television monitor screen responsive to coupon-related data being encoded in the television signal transmission. Upon observing the indicia on the television monitor screen, the user can manually and selectively enable and disable  
20 extraction of the coupon-related data from the television signal transmission.

The selectively extracted coupon-related data is then accumulated in a memory means within the decoding means, and after an optional editing function, the extracted  
25 coupon-related data is stored on a recording medium. In a preferred embodiment of the invention, the recording means is a magnetic card writer/reader or smart card input/output device, and the medium is a magnetically striped card or smart card (which may be referred to as a "Q-card<sup>TM</sup>" medium).

30 In another aspect of the invention, there is provided a decoding unit for receiving a television signal transmission containing picture information for display on a television monitor screen and also containing encoded

coupon-related data, the decoding unit comprising means for extracting the coupon-related data from the television signal transmission, and recording means for recording the extracted coupon-related data on a recording medium for subsequent readout and redemption. The decoding unit may  
5 be a stand-alone unit or incorporated within the electronics of a "cable box".

A recent congressional regulation mandates the inclusion of a closed-caption feature on all TV sets produced after July, 1993. With the new congressional regulations, major TV set manufacturing companies have made  
5 investments toward the production of a closed-caption chip which will replace the current and expensive external closed-caption box. Because the information (printed dialogue) to be displayed on the screen after closed-caption processing is transmitted in the video baseband  
10 signal between horizontal synch pulses in the vertical interval on specified horizontal scanning lines within such vertical interval, the closed-caption information channel is well suited for transmitting message information for the electronic coupon system according to the present  
15 invention. In such an embodiment of the invention, the basic decoding means is the closed-caption chip within the closed-caption modified TV set. This reduces the amount of hardware necessary for implementing the electronic coupon apparatus according to the present invention but will  
20 require interfacing certain signals between the modified TV set and an electronic coupon subsystem of this invention.

The present invention therefore encompasses an electronic coupon system as described earlier in this specification except that the decoding portion of the  
25 system is contained within the closed-caption circuitry in the modified TV set. Closed-caption information is typically encoded during horizontal line 21 of the vertical blanking interval of the television transmission signal. Coupon-related information can be substituted for the



closed-caption information in line 21, or it can be carried in other available lines in the vertical interval, e.g. line 18. The invention further relates to a closed-caption modified TV set adapted for use with an electronic coupon subsystem, and, finally, to the combination of the closed-caption modified TV set and the electronic coupon subsystem.

After the electronic coupon is redeemed at the redemption center, additional apparatus at the redemption center is configured to assemble and printout reports of coupon redemption activity for each manufacturer. However, after being entered electronically, the information is sorted and reports are generated automatically by the operation of the redemption center's computer. The operation of the computer apparatus at the redemption center is not unlike the configuration and functioning of any other data base computer system, the only difference being the type of information being manipulated.

In a sophisticated redemption center apparatus configuration, means can be provided for reading the stored electronic coupon data from the user's Q-Card™ by having the user wipe (or insert) the card through a magnetic (or other appropriate) card reader at the cash register, and the discounts would be applied automatically to the products being purchased. The sales slip would reflect the original price, the discount, and the net amount owed by the customer in an almost instantaneous fashion. Optionally the redemption center can have an electronic coupon desk where a user can wipe, or insert, his or her card in a card reader and have a display or printout of the availability and location in the store of the product of interest. If printed out, the coupons or coupon list can be presorted so that the purchaser will be guided through the store aisles in an orderly fashion as the different items are gathered in.

In this description, reference will be made to the use of Q-Card™s or magcards and the recorders and readers therefor. However, it will be understood that this referencing is for convenience only, and that optically recordable and readable cards, "smart cards" using microelectronic chips, and any other type of card of convenience upon which data can be recorded and/or played back could be substituted for magnetic cards or magcards, along with the handling apparatus for such cards. Collectively, the generic name given to different types of cards, as used herein, is "Q-Card™".

#### BRIEF DESCRIPTION OF THE DRAWING

The invention will now be described in more detail having reference to the accompanying drawings in which:

FIGURE 1 shows the front face of a home unit which functions as a decoder for extracting coupon-related data from a television signal transmission;

FIGURE 2 illustrates possible interconnections of the home unit as it would be connected, depending upon desire of the user, with a cable box, VCR, television monitor, printer, and remote control device;

FIGURE 3 is a block diagram of the internal functions of the home unit;

FIGURE 4 is a more detailed block diagram of the control circuit shown in Figure 3;

FIGURE 5 is a representation of the arrangement of bytes comprising the separate fields of the encoded coupon message;

FIGURE 6 is a more detailed block diagram of the authorization controller shown in Figure 4;

FIGURE 7 is a detailed block diagram of the "authorized after X days" interval timer of Figure 6;

FIGURE 8 is one arrangement of the apparatus in a redemption center for receiving and manipulating data from redeemed electronic coupon data string;

FIGURE 9 illustrates a basic arrangement for crediting electronic coupon discounts directly on the sales slip of a cash register at a redemption center;

FIGURE 10 illustrates the interconnections of the home subsystem unit as it would be connected with a closed-caption modified TV set;

FIGURE 11 is a block diagram of the internal functions of the home unit subsystem; and

FIGURE 12 is a more detailed block diagram of the control circuit shown in the block diagram of Figure 11.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A home unit 1 is shown in Figure 1 in the form of a small box which could be placed on the top of a television receiver or other convenient location. The home unit 1 can optionally have a display screen 3 and a series of operating buttons 5. In a preferred embodiment of the invention, a magnetic card or smart card (hereinafter referred to as Q-card)<sup>TM</sup> slot 7 receives a card (not shown) for writing or reading purposes. It is to be understood that other mediums could be used, such as optical cards and microelectronic (microchip) circuit cards, or a combination of both.

Figure 1 is only one example of a home unit, and many variations are possible. For example, all of the electronics of the home unit can be hidden from view with

the exception of an infrared sensor to receive a command from a remote control device. The Q-Card™ writer/reader with slot 7 can be a totally separate unit so as to occupy as little space as possible on the top of a television set.

5 For example, the Q-Card™ writer/reader could be stuck to the side of a television receiver by means of doublebacked foam tape or hook and loop fasteners sold under the trademark "VELCRO". Some functions, however, might be more user friendly with a home unit such as that shown in Figure

10 1 which could duplicate any of the functions controllable by the remote control device.

The operation of the home unit would typically be as follows. In describing this function, reference is also made to the block diagram of Figure 2 which shows a basic

15 overall arrangement of the home unit 1 having various coupling arrangements with a cable box 33, a VCR 35, a television receiver/monitor 39, a printer 41, and a remote control device 43.

During the presentation of a television commercial, a

20 logo or emblem 40 is seen in the upper right hand corner of the TV screen 38. If the viewer is interested in the product that is the subject of the commercial, the user pushes the VIEW button 9, and a message (a portion of the data from the data string) 8 is instantly decoded from the

25 television signal transmission and displayed along the bottom of screen 38. As will be explained later, the data string comprising the message information signal is made up of many parts, one part of which is the message itself which is displayed on the screen. The balance of the data

30 string is temporarily ignored by the system until and unless the user requests that the electronic coupon be retained, and in such a case the entire data string will be stored in a memory inside of the electronic coupon home unit 1. The message can inform the viewer that the

35 manufacturer or sponsor of the commercial has available an electronic coupon to be redeemed. For example, the message

8 might read "\$1 discount on 6-pack of Coke®". If the user wishes to take advantage of this offer, the COUPON button 11 is pressed, and coupon-related data is entered into an internal memory of the home unit 1. A confirmation signal is generated upon successful memorization of a selected electronic coupon which alters an attribute of the logo as a visual indicator of the confirmation. For example, a color in the logo will change upon confirmation. The viewer continues to push the VIEW button 9 each time a logo or emblem 40 is observed and the viewer is interested in the commercial product. Likewise, each time the viewer is interested in redeeming the coupon offer made in the message 8, the COUPON button 11 is pressed to store all selected coupon-related data for each commercial in the internal memory of home unit 1.

When the viewer wishes to redeem the electronically stored coupons, the DISPLAY LIST button 13 is depressed. This immediately puts onto the screen 38 or to the local display 3 of the home unit 1 itself, a coupon list which shows all of the accumulated electronic coupons selected by the viewer by the procedure just described. Since the list may be long and include items which the viewer may no longer interested in, an editing function is provided. The UP ARROW button 15 and DOWN ARROW button 17 are used, as with any computer keyboard, to move a cursor through and scroll the coupon list. For any listed coupons in which the viewer is no longer interested, the "DELETE" button 4 is pressed. This will instantly delete the coupon at the cursor position from the list (or from the item category discussed below). The viewer then pushes the MARK button 6 for each coupon of current interest in the list. After being satisfied that the list includes all the electronic coupons which the viewer wishes to redeem, the LOAD COUPON button 19 is pressed while a magcard (not shown) is wiped through slot 7. This will transfer the marked coupons to the magcard for redemption. In the smart card, due to increased data storage ability, all sections could be

loaded at once in separate subfile categories to match the type of retail industry, i.e., apparel, grocery, major appliances, entertainment, etc.

Looking ahead at the coupon-related data to be stored in the memory of home unit 1, Figure 5 shows a one character code byte 260 which is part of the retail coupon purchase information identifying the product. Each product type will have a different code number. For example, grocery items may be code 1, hardware items code 2, automobile items code 3, home improvement items code 4, and so on. One of the convenient features of the present invention is the automatic sorting of inputted coupon-related data, similar to the operation of a pocket telephone number data base wherein the names associated with each telephone number are sorted in alphabetical order automatically upon entry. When the viewer is thus presented with the list of redeemable electronic coupons, the coupons will be presorted automatically into separate categories of items, with grocery items being listed first, hardware items second, etc., or in the case of numerous family members sorted to have subfiles for each member of the household, all done simply by use of a remote control device. The viewer can further assist in the convenient use of electronic coupons by uniquely marking individual Q-Card<sup>TM</sup>s, or choosing different colors for them so that each marked card will be used to store the same type coupon. For example, the card for grocery items may be colored blue, hardware items green, automobile items red, and so on. Since the items on the TV screen will already be grouped in categories, it will be relatively easy to place a mark beside the selected items, or group of items, in any particular category and, using the LOAD COUPON button 19, record on the respective colored card only the items in that category. The next colored card is then selected and the user scrolls through the next grouping on the list of redeemable coupons and makes the choices as before for this new category. Since most television sets have color

5 screens, it is a relatively simple matter to go one step further in the presentation of the list of electronic coupons by presenting the particular category of coupons on the screen in colors corresponding to colored cards to be used to store the coupons selected from that category. The electronics for carrying out this function are not described in this specification.

10 Since the viewer may have several Q-Card™s which contain data that is no longer valid, an ERASE button 21 is provided. The viewer merely holds the ERASE button 21 down while wiping the card through slot 7, and the appropriate magnetic strip on the card is erased. Both the ERASE button 21 and LOAD COUPON button 19 must be held down while wiping the card through slot 7. This is a safety feature  
15 which will eliminate the possibility of accidentally recording over or erasing a card if either of these two functions were to remain active upon pushing and releasing their respective buttons.

20 When either the LOAD COUPON or ERASE buttons 19 or 21 are pressed, it is important for the user to know whether or not the information has been successfully transferred to the Q-Card™. In accordance with known circuitry, when either button 19 or 21 is pressed, a green "standby" light 2a will illuminate. When the card is wiped through slot 7,  
25 if it has been read correctly and verified by known digital comparison techniques, a red "confirm" light 2b will be lit. Preferably, the indicators 2a and 2b are LED indicators.

30 Finally, as will be learned later, the viewer/user may redeem certain electronic coupons at a retail store and not others. He or she thus returns home with some unused electronic coupons on the Q-Card™. Provisions are thus made to retrieve unused electronic coupons back into the memory of the home unit 1 by pushing the READ IN button 23  
35 and wiping the Q-Card™ through slot 7, to eliminate the

accumulation of numerous cards, or, in the case of smart card, unwarranted data (excessive data) on the card of similar categories with only remnant coupons remaining.

Since the electronic coupon information to be  
5 displayed as a message 8 on screen 38 is contained in the television signal transmission, various possibilities for connecting the home unit 1 with already existing components in the viewer/user's home are possible. Figure 2 shows certain possibilities. In solid line interconnection, a  
10 cable box 33 receives the television signal from a cable system and outputs the cable-converted signal to one of the unused air-transmitted television channels as input to VCR 35. Alternatively, an antenna 10 may be routed, as shown in dotted lines to the input to VCR 35 or directly to the  
15 television receiver 39. As yet another alternative, the cable box 33 can output its rf signal to an rf input terminal 61 of home unit 1. If a VCR 35 is used, the rf output on line 51 can be substituted into the rf input terminal 61 of home unit 1. In the example of this  
20 description, it will be assumed that the rf input to terminal 61 is a television signal transmission on channel 3. In such a case, home unit 1 must have an rf-to-video converter, as will be explained in connection with Figure 3.

25 More desirably, home unit 1 receives a video input on terminal 63 from line 53 of VCR 35. Of course, any other video source is equally acceptable, such as that on line 55 directly from the television receiver/monitor 39. Video in and video out terminals on television sets are becoming  
30 more popular but are not available on certain sets, especially older ones.

In order to insert the coupon-related data onto the signal being displayed on screen 38, it is necessary to pass the television signal, normally being displayed on the  
35 TV screen, through home unit 1. The message 8 is then



inserted by an encoding process and routed to the television set 39. If a video input terminal is available on TV set 39, an encoded video formatted signal on line 49 is outputted at terminal 67 of home unit 1. If an rf input is to be used on television set 39, a video-to-rf converter within home unit 1 will have to be used to output a channel 3 rf signal on line 47 from output terminal 65. Figure 2, in addition to showing a Q-Card™ writer/reader 45 (having a slot 7 as shown in Figure 1), also shows an optional local printer 42 for direct printing of coupons to be redeemed by the viewer/user. An auxiliary output from terminal 69, however, is available for an external printer 41 or any other use, such as an optical stripe writer/reader or smart card writer/reader instead of the magcard writer/reader 45.

As mentioned earlier, instead of using front panel control buttons 5 (Figure 1), a remote control device 43, sending its commands along an infrared path 44, will be received by home unit 1, and all functions of home unit 1 will respond to such commands. Various methods and devices are available for programming remote control devices for new functions, and therefore such discussion in this description is not necessary. It is sufficient to state, however, that any mechanical button operation on the front panel of home unit 1 shown in Figure 1 can be easily duplicated on the remote control device. Two possible exceptions are the ERASE (or UNLOAD) and LOAD COUPON functions described earlier whose functions are preferably carried out only when the respective buttons 21 and 19 are held down during the wiping of the card through slot 7.

Figure 3 is a block diagram of the home unit 1 depicting the circuit blocks necessary to carry out the desired functions. Each of the blocks will be described as to their specific function, and all such blocks in Figure 3, when fully detailed in accordance with Figures 4, 6, and 7 and the associated description, will enable the person

skilled in the art to make and use the invention by interconnecting available components to implement the functions to be described and in a manner which would be readily apparent to those skilled in the art without undue experimentation.

It will be recalled that the television signal transmission will contain coupon-related data encoded in the transmission. For a description of how this can be done, reference is made to the inventor's aforementioned prior invention entitled "ENCODER/DECODER FOR VISUAL DISPLAY OF AUDIO/VISUAL PROGRAM PARTICULARS", filed March 10, 1992 under Serial Number 07/849,224, such prior patent application being incorporated here by reference. In such prior patent application, it is suggested that certain message information can be carried in the vertical interval between horizontal sync pulses of a television signal, similar to the manner in which close-captioned message information is transmitted. Although other methods of encoding a television signal transmission are possible and could be described, the manner in which such encoding takes place is not the focus of this invention, and it will be assumed that the closed-caption type encoding process is used. Obviously, the information could also be encoded in various sub-carriers of the video/audio components of the television signal, or in vertical blanking interval lines other than the closed-caption line 21, such as line 18.

In any event, the function of Figure 3 is to decode the message information from the television signal transmission, indicate the existence of the coupon-related data being transmitted to the viewer, mix the decoded coupon-related data with the normal television picture signal so as to present a superimposition of the two signals on the television screen of the viewer, and to provide various functions for manipulating the electronic coupon information, e.g. for coupon redemption.

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If the input to home unit 1 is video, it is applied to terminal 61 and sent along line 105 to an automatic signal input selector 103. If the input is rf, it will be inputted into terminal 63, applied along line 100 to a conventional rf-to-video converter 101, the output of which is again a video signal also routed to selector 103. Automatic signal input selectors are known which respond to whatever input is active, so that the operation of selector 103 is understood to be known without detailed explanation. The video output on line 109 is applied both to the message controller 115 and alpha-numeric coupon message decoder 111, decoder 111 extracting the message encoded in the video signal and outputting the message signal alone on line 113 as an input to control circuit 117. In this description, the term "message" will be used to designate the contents of the electronic coupon. For example, decoder 111 converts the electronic coupon information encoded in the television signal transmission to a series of digital bits grouped in bytes, a number of bytes defining the data contained in several fields, the string of fields defining the "message". Both the video (picture) input on line 109 and message input on line 113 are operated on in control circuit 117 in a manner to be discussed later, with the result that video (picture) information outputted on line 119 and message information (coupon-related data) on line 123 is mixed in video mixer 121, sent to display driver 139 over line 137, and made available at video output terminal 67 or, through a video-to-rf converter 143 to an rf output terminal 65 over line 145. A TV monitor will receive either output 65 or 67, depending upon whether an rf or video input to the TV monitor is selected. This basic signal path through message controller 115 results in a display of the message in the picture presented to the viewer, preferably superimposed at the bottom of the screen so as to permit the viewer to continue to watch the program or commercial in progress without significant distraction and to avoid,

or to reposition away from, any standard closed-caption message being viewed.

As indicated, a logo or emblem is to appear on the TV screen when a valid message is being transmitted, and toward that end, an output of decoder 111 is applied on line 112, to message sensor 114. Sensor 114 is therefore simply a threshold detector which disables logo generator 118 by a control line 116 in the absence of a message signal. However, when a message is being decoded by decoder 111, the threshold of sensor 114 is exceeded, and the output on line 116 is an enabling control signal (logical 1) to permit logo generator 118 to generate an electronic coupon logo or simple emblem with timing and synchronization so that the logo will appear in the upper right hand corner of the screen. A suggested logo, for example, would be a thin circle. The logo signal on line 120 is fed to video mixer 121 and mixed with the video picture information and message information as previously described. Thus, if a message is present in the television signal transmission that is valid to that particular home unit, depending on whether or not certain security and usage flags if any exist, the logo will appear on the TV screen, and if not, the logo will not be visible.

A keyboard 150 represents either the buttons 5 (Figure 1) on the home unit 1 itself, or the functions controlled by buttons on a remote control device 43. The infrared light beam 44 is sensed by infrared sensor 153 and sent as digital commands on line 155 to remote command converter 151. Converter 151 merely converts the digitized remote control button pushes to a specific "1" and "0" control signal for operating in parallel with or in substitution for the ON/OFF mechanical buttons of the keyboard 150. By such control, messages are selectively stored by command of the control circuit 117 passing the extracted message on line 125 to coupon message memory 128. As confirmation to the user that an approved or validated coupon message has

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been successfully stored, control unit 117 sends a confirm signal back to logo generator 118 on line 116a which changes an attribute of the logo, e.g. it may change to a solid filled circle, or it may change color.

- 5           An editing function in control circuit 117, to be discussed later, can erase any stored coupon by action on line 127 and can retrieve stored messages from memory 128 on line 129.

10           After the accumulated messages in coupon message memory 128 are properly edited, they are outputted over line 131 to a Q-Card™ writer/reader 133 and printer driver 132. Although not the preferred embodiment of the invention, the output of driver 132 is available as an auxiliary output at terminal 69, or is sent along line 134  
15           to a local coupon printer 42 which is physical located on the home unit 1, similar to the manner in which the tape printer in a hand-held calculator is mounted. In this way, the selected coupon messages can be printed out for redemption at a retail outlet similar to the way cut-out  
20           coupons are redeemed prior to the present invention. There are advantages, however, in using coupons printed by the home unit. One advantage is that, along with the stated amount of discount for a particular product, the standard bar code for that product is also printed on the coupon.  
25           When the coupon is taken to the store for redemption, an optical reader at the store will scan the bar code and make available valuable information to the customer, such as whether or not the product is in stock and the aisle location in the store. While cut-out coupons have bar  
30           codes, there is an opportunity to include other information useful to the store owner and/or product manufacturer, such as personal data on the coupon user and the details of the television program being viewed when the coupon offer was selected.

In the preferred embodiment of the invention, the accumulated coupon messages in memory 128, upon command by the viewer/user will be outputted over line 131 to a Q-Card™ writer/reader 133 and written onto a Q-Card™ wiped through slot 7 receiving its input from writer/reader 133 on line 135.

As earlier explained, if information, including but not limited to file maintenance and information reporting, is to be transferred from the Q-Card™ back to the home unit 1, this is accomplished by wiping the card through slot 7 resulting in a signal on line 136 to the reader portion of writer/reader 133. The recovered message information is then passed over line 247 back to control circuit 117 for insertion into the memory 128 along with the other accumulated messages there.

Figure 4 is a more detailed block diagram of the control circuit 117 shown in Figure 3. Recalling the need for passing the video signal through the home unit 1 for insertion of the logo and message, the video input on line 107 is passed through a video amplifier 201 and onto mixer 121 into which the logo signal on line 120 and the message on line 123 are inputted. The mixed output is sent to display driver 137 for ultimate display on TV monitor 39.

In this discussion, as opposed to operating a number of buttons on the home unit 1 itself, it will be presumed that the operation of control circuit 117 is by way of the remote control device 43 which produces a number of commands from converter 151 and decoded into separate command lines in remote command decoder 205 in a conventional manner. This decoder 205 simply creates a digital "1" or "0" signal on the appropriate output line in correspondence with the unique digital code generated by pushing corresponding buttons on the remote control device 43. Such processing of information from by remote control unit into separate command lines is a well-known technique.

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It will be recalled that the first step in the process of storing a desired message is to recognize that the message is being transmitted and to insert a logo on the TV screen. Alpha-numeric coupon message decoder 111 continually receives the video input signal which may or may not contain a message. However, if one exists at all, it will be passed on line 113 to video switch 209 and AND gate 213. Since the viewer does not want to see every message that comes along, the message signal is sent to video switch 209 for control by the user. On the other hand, in Figure 3 it was learned that when a message is present, a logo is generated in the upper right hand corner of the TV screen. Preferably, the logo is not switchable to an OFF state. When the viewer sees that logo, the "VIEW" command enables video switch 209 to pass the message on line 123 to video mixer 121.

The "VIEW" command on line 207 will always pass the message through to be observed on the TV screen. However, in the absence of a "VIEW" command, video switch 209 will be turned off and no message transmitted through to the TV monitor. Thus, while the logo will appear for each and every electronic coupon message being transmitted (preferred embodiment option, only if approved or authorized), the message at the bottom of the screen will appear only at the user's discretion, i.e. if the "VIEW" command is given. The logo will intentionally be small enough so as to not disturb the viewer from enjoying the picture presentation. It should be realized moreover, that such logo will appear only during commercial presentations in any event.

The viewer will not want to accumulate every available electronic coupon in memory 128 for a variety of reasons. First, the viewer will not be interested in purchasing each and every product for each logo appears. Secondly, the memory 128 will, of course, have reasonable storage capacity limitations. Thus, a message is not to be stored

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in memory 128 until the user selectively issues the "COUPON" command. This command, on line 211, opens AND gate 213 and passes the message signal on line 215 to a message verifier 216 which simply ensures that the asynchronous signal being received is digitally valid, at which time it sends the complete message on line 125 to be stored in memory 128. The viewer then has another opportunity, at seeing the next logo, to select or not the message for storage in memory 128 by again issuing the "COUPON" command. Memory 128 thus accumulates a number of messages representing stored electronic coupons.

At any time the viewer wishes, a review of the stored messages can be made. All that is necessary is for the viewer to issue the "DISPLAY LIST" command. This command has two basic functions. First, over line 217, it is inverted logically by NAND gate 219 so that a "DISPLAY LIST" command turns off video amplifier 201 by control line 203. The picture content of the video program is thus interrupted and a blank screen, or solid colored screen, would appear on the TV monitor. At the same time, the "DISPLAY LIST" command switches to the output of video switch 209 the input on line 288 from a message list editor 227 which continually sorts and monitors all of the messages in memory 128 on retrieval line 129. Thus, at any time video switch 209 selects its input on line 288, the entire list of messages in memory 128 will be presented on the TV screen sorted by a code and product manufacturer identification using fields 260 and 262 in the message data bytes of each electronic coupon, as will be discussed in connection with Figure 5. In this case, the entire screen, not just the bottom thereof, will contain information, being the entire list of electronic coupons stored in memory 128. The reason for interrupting the video programming picture by disabling amplifier 201 is to permit easy viewing and editing of the electronic coupon listing without a disturbing moving picture in the background. The viewer would obviously want to concentrate on the



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electronic coupon listing without distraction, and would do so when the viewer is not interested in the picture presentation (e.g. late at night, just before going on a shopping trip, etc.).

5           Since the accumulated electronic coupons may be more than the TV screen can display at one time, the viewer can issue an "UP ARROW" or "DOWN ARROW" command on lines 225 and 223 respectively to scroll through the stored electronic coupon menu. Since it is also desirable to  
10       discard electronic coupons no longer of interest, expired, or which were tentative in the first place, an editing function is provided in control circuit 117.

          With the "DISPLAY LIST" command issued, the viewer can scroll through the coupon menu and issue a "DELETE" command  
15       on line 238 which immediately removes the identified coupon message from memory. Whether or not a "DELETE" command is issued, the viewer may issue a "MARK" command on line 236 which inserts a flag into those messages on the menu which the user wishes to keep while the cursor is scrolling  
20       through the coupon menu. This is a convenience feature whereby the user may not want to write all of the coupons to the card, for example if the user wants to shop at one grocery store for some items now and at another grocery store for other items later. Also, with other family  
25       members involved, a coupon may not pertain to that individual's desires, but may to another. After the viewer is satisfied that all of the marked electronic coupons are those he or she wishes to redeem, the "LOAD COUPON" command is issued on line 221. Prior to issuance of the "LOAD  
30       COUPON" command, AND gate 229 as disabled by the low logic level of line 221. Thus, the continually recycled messages in memory 128, available on line 228 does not pass through AND gate 229. However, after marking, the "LOAD COUPON" command erases all of the flagged messages in memory 128  
35       over erase line 127 by action of the message list editor 227 responding thereto, and enables gate 229, passing the

edited electronic coupon listing over line 230 to a message assembler 231 which serves as a holding register for the edited coupon list. The coupon list is passed through authorization controller 243 and on to data driver 245 for outputting on line 131 to either a printer driver 132 or the Q-Card™ writer 133. In this manner, the Q-Card™ only contains those electronic coupons which the viewer wishes to redeem.

Another feature of the invention involves an automatic validation function which checks to see if any given message which the viewer wishes to store is valid and "authorized", before the user issues the "LOAD COUPON" command. There are several reasons why it would not be advisable to either permit storage of a particular electronic coupon or to permit it to remain in memory 128. The obvious reason is that certain coupons are intended to expire after a certain date. One of the functions of the home unit 1 is to automatically delete those coupons which have expired from the coupon menu listing. Another reason for limiting the contents of memory 128 is that a manufacturer may wish to honor a discount coupon only a limited number of times per family, or a single discount now and a predetermined time to pass before the discount would be good by the same user. Otherwise, the manufacturer may have a flood of discount coupons generated by a single user who distributes the coupons in printed form or on Q-Card™s to all of his friends or neighbors at will.

Another reason for disqualifying the storage and usage of electronic coupons is that a user of the electronic coupon system may be required to reinitialize or update the system by means of a simple regular, perhaps yearly, maintenance procedure. Each user, for example, may be considered a subscriber to the electronic coupon service, and if there is reason to discontinue a user's subscription, such user should be precluded from using the

system. The updating will ensure that the household information retained in the system is kept current.

5 Authorization controller 243 is provided to serve those functions. It receives the message list from message assembler 231 and enters information from a subscription card (to be discussed later) on line 247 from the Q-Card™ reader 133. Controller 243 then automatically permits passage of, or not, the contents of register 231 in accordance with the block diagram of Figure 6.

10 Having reference back to Figure 4, the object of the authorization controller 243 is to selectively restrict electronic coupons from being recorded on a Q-Card™ by Q-Card™ writer/reader 133 under certain conditions, and to  
15 add or update household information which identifies the user/owner of the Q-Card™. Toward this end, the output from message assembler 231, representing the digital form of the assembled (edited) list of electronic coupons, is passed over line 244 to authorization controller 243. Household information is received by controller 243 over  
20 line 247 from the Q-Card™ reader. If there are no restrictions on the use of any particular electronic coupon, controller 243 passes the digitized electronic coupon over line 251 to data driver 245. Driver 245 is simply a buffer to send data to printer driver 132 and Q-Card™ writer 133. It should be noted that it may be of  
25 value to pre-clear these authorizations prior to the displaying of the logo so as to not frustrate the home user. That is, for example, if a user's subscription has expired, or the use is otherwise not authorized to record and use electronic coupons, instead of preventing  
30 information to be written to the Q-Card™, similarly designed circuitry will restrict viewing of the logo in the first instance.

Figure 5 shows one arrangement of data bytes in a  
35 complete message representing an electronic coupon. The

complete message is shown at 250 comprising four sections:  
a RETAIL COUPON PURCHASE INFORMATION portion 252; a  
RETAILER PROCESSING INFORMATION portion 254; a SECURED  
SUBSCRIPTION SERVICE portion 256; and a FUTURE EXPANSION  
5 portion 258. These four portions are also shown broken  
down into their smaller components in Figure 5. For the  
purposes of disclosing the basic invention, only the first  
three sections are discussed in detail herein and  
implemented by specific circuit blocks in the drawing.

10 For example, portion 252 contains information about  
the product being purchased or upon which the discount is  
to be applied, and has the following sections: CODE 260 (1  
byte), PRODUCT MANUFACTURER 262 (5 bytes), CHECK DIGIT 264  
(1 byte), PRODUCT IDENTIFICATION 266 (5 bytes), COUPON  
15 DISCOUNT AMOUNT 268 (6 bytes), EXPIRATION DATE 270 (6  
bytes), VALIDITY TIME INTERVAL 272 (6 bytes) and LIMIT CODE  
274 (1 byte).

In the case of magnetic cards, the card to be used  
with the invention is based on the current ADA standards  
20 (210 bits per inch, per track) of magnetic card technology  
using an older standard 4-track per strip system, with a  
maximum of four strips per card. There are approximately  
2,750 data bits per magnetic tape strip X 4 strips maximum  
per card, or 11,000 bytes per card. In certain fields of  
25 information, such as that in RETAIL COUPON PURCHASE  
INFORMATION portion 252, only numerical information is  
necessary. In these fields, five bits per character would  
be required resulting in  $2,750/5=550$  usable characters per  
strip or 2200 bytes per card. In other fields, as will be  
30 discussed later, it may be necessary to express the  
information in alpha-numeric format, such as with names or  
descriptions, and in such a case, each character will  
require 7 bits for definition, and in the alpha-numeric  
character mode, the total number of available characters is  
35  $2,750/7=392$  usable alpha-numeric characters per strip. In  
Figure 5, those fields which can use a numeric format have

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their bit count identified with a # sign, while those fields requiring an alpha-numeric format have their bits identified with the @ sign.

Depending upon choice and need, the number of tracks per strip can be modified, and this may involve the use of non-ADA standards in order to accommodate a sufficient quantity of coupons without the requirement of four strips per card.

In the case of smart cards, the format is based on current smart card input/output standards.

In Figure 5, the RETAILER PROCESSING INFORMATION portion 254 has the following fields: RETAILER REIMBURSEMENT AMOUNT 276 (4 bytes); ANNUAL UPDATE CODE 254 (3 bytes); and REQUIRED MERGE LINES 280 (1 byte). The reimbursement amount in field 276 is the retailer's reimbursement expressed in cents. Field 254 is the annual (or possibly every two year) update code for establishing a renewal deadline date. The current date must be prior to this date for the coupons on the user's Q-Card™ to be valid. The first of the three bytes represents the first, second, third, or fourth quarter of a year, and the second and third bytes represents the cut-off year (e.g. 92 = 1992). Field 280, INFO CODE, is reserved for use by the subscription service company and comprises one numeric byte. It may be used by the service company to gather information about the marketing of the product or about the customer household more intelligently. For example, a "0" in the field might indicate that the advertiser is not interested in household information, but rather quantities and geographical marketing data. A "1" may indicate that an advertiser wishes to receive a report from the subscription service organized by consumer zip code. A "2" could indicate the desire on the part of the advertiser to know the age grouping in the household that purchased the product. Thus, the advertiser has an opportunity to insert

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a code in the message being transmitted (and to change it periodically) which automatically will be understood and acted upon by the subscription service company to give instant marketing results to the advertisers in exactly the way the advertisers want it.

The SECURED SUBSCRIPTION SERVICE 256 portion of the message 250 is broken down into the following fields: SOURCE: PUBLICATION/BROADCAST LOG 282 (11 bytes); HOUSEHOLD NAME 285 (15 bytes); ADDRESS 286 (20 bytes); and ZIP CODE 288 (5 bytes). To increase the number of coupons on a Q-Card, the last three fields can be expressed in a "Customer I.D. Number" of 9 numerical bytes instead of the 40 bytes indicated.

An approximation of the number of coupons that can be recorded on a single Q-Card, using the numbers noted in Figure 5 and assuming a household 9 byte code, a total of 50 bytes (all numeric) per coupon results in 43 coupons plus one household field per card. In the case of smart cards, the standard is a full 3 pages of data per card which is in abundance of electronic coupon needs or requirements.

Future expansion of the system will involve the immediate use of a consumer's credit card at the retail outlet at which the credit card information will be also be a part of the information recorded on the electronic card carrying the electronic coupons.

Referring to Figure 6, as previously indicated, there are certain restrictions on the use of electronic coupons. Authorization controller 243 thus monitors all messages intended to be stored on the user's Q-Card, i.e. the assembled messages on line 244, and selectively passes this data through AND gate 305 if the other inputs to AND gate 305 are logical "1"s. In Figure 6, there are two functional blocks which would turn off gate 305 if certain

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conditions are not met. Interval timer 313 is configured to output a logical 1 on line 315 if an electronic coupon is intended to be used only once and then again only after the passage of a predetermined time interval. That  
5 function is discussed in connection with Figure 7.

Contained within the electronic coupon message is an expiration date register 303 which decodes the 6 byte section 270 from the retail purchase information 252 in the character string comprising the electronic coupon message.  
10 Register 303 thus is simply a comparator comparing the expiration date of the electronic coupon to be recorded on the user's Q-Card™ with the real time on line 312 from an internal real time clock generator 311. If the expiration date has not yet passed, the output of register 303 will be  
15 a logical 1. Otherwise, it is a logical 0 and turns off date 305 to restrict passage of the message attempting to be passed to data driver 305 from the message assembler 231.

It is to be understood that the use of a real time  
20 clock and expressing dates as days/months/years is a logical and direct way of dealing with expiration dates and the like. However, this may require the user to set a real time clock, which is a nuisance, and requires six bytes of valuable coupon message content. To eliminate these  
25 concerns, a modification of the circuitry of Figures 6 and 7 (not shown) by rather routine measures can use a 2-digit expiration date code representing the number of weeks the coupon would be valid. This "incremental" manner of  
expressing time will automatically eliminate the need for  
30 a real time clock.

As previously discussed, in order to be authorized to use the electronic coupon system of this invention it is anticipated that the user will, beneficially, be required to cooperate with a subscription service, and in such a  
35 case, two additional needs of the system require attention.

First, a subscription data card (or other means of inputting information to the electronic coupon system) will be issued to each viewer/user and contains, already recorded on the card, an approval code or household information which was taken from an information sheet prepared by the viewer/user when applying for the subscription. The subscription card (not shown) is read into the system by wiping it through slot 7 of the magcard reader 133 (Figure 4), and the data reaches authorization controller 243 via line 247. The information read into controller 243 from the subscription data card includes household date information, i.e. data bytes comprising the secured subscription service portion 256 of the electronic coupon message 250, and expiration date information from data field 270. The former is detected and decoded in decoder 307 which then updates the household data base programmable read only memory PROM 309. This household information on line 306 will be combined, in AND gate 305, with the electronic coupon information on line 244 if AND gate 305 is enabled at its other outputs. The updated household data base includes the new subscription expiration date which is inserted in field 254 when the user downloads electronic coupons to a Q-Card™. In this way, the retailer can verify the fact that a user is an updated and valid subscriber.

Upon receiving a new subscription data card extending the user's subscription service through another annual period (or other convenient time period), subscription card decoder 301 decodes a new "VALID UNTIL" date from the subscription Q-Card™ and updates the expiration date register 303. Register 303 thus has two functions, it compares the real time clock on line 312 with both the expiration date bytes 270 in the electronic coupon message and also makes a similar comparison with the "VALID UNTIL" date read in by the subscription Q-Card™. For so long as the subscription is valid and the expiration date of the electronic coupon has not yet passed, gate 305 will be



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enabled to pass the electronic coupon information from line 244 and the household identification information on line 306 to its output 351. Expiration date register 303 is implemented primarily by a pair of logic comparators  
5 commonly used in the art.

The operation of the "AUTHORIZE AFTER X DAYS" interval timer 313 will now be discussed in conjunction with Figure 7. It is the function of this block to monitor the "validity time interval" bytes 272 of the retail coupon  
10 purchase information portion 252 of the electronic coupon message 250. The time interval concerned is that time beyond which the manufacturer authorizes a repeated use of an electronic coupon. Thus, the first time a user selects an electronic coupon to be recorded on the user's Q-Card,  
15 it will be recorded, and simultaneously a date, equal to the time interval indicated in field 272, will be added to the current real time and stored in an internal memory 419 of interval timer 313. Any attempt to use the electronic coupon before the interval time has passed will result an  
20 output on line 315 which presents a logical 0 to AND gate 305 preventing that particular electronic coupon from being recorded on the user's Q-Card.

The assembled messages are inputted to interval timer 313 overlying 244 and routed to one input of AND gate 407  
25 and to coupon message comparator 401. Interval hold memory 419 contains all stored electronic coupons having a timed interval restriction. Since the first time an electronic coupon is to be used, memory 419 does not contain that electronic coupon in its memory, the memory interface 417  
30 being scanned by scanner 420 does not contain an equivalent electronic coupon message on line 425 to be compared in comparator 401. Thus, there would be no match in the two electronic coupon messages, and line 403 would be a logical 0. This control signal on line 403 is inverted in NAND  
35 gate 405 to produce a logical 1 on line 315 enabling the

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electronic coupon to pass through AND gate 305 in Figure 6 and be recorded on user's Q-Card.

Simultaneously, the logical 1 at the output of gate 405 enables AND gate 407 which passes the electronic coupon message over line 409 to a combiner 415 and an interval time detector 411. Detector 411 strips from the electronic coupon message the validity time interval bytes in field 272 (e.g. representing a 6 month interval) and sends that data to partial adder 413. The real time clock on line 312 is also sent to adder 413, so that the output is a time equal to the current time plus the interval time (in this example, 6 months). The electronic coupon signal from line 409 is thus combined with the new advanced time (current time plus 6 months) in combiner 415 and is sent to memory interface 417 over line 431 to be written into memory 419 over line 423 in a conventional manner. From this point forward, as scanner 420 scans through the contents of memory 419 by means of the memory interface 417 continually retrieving memory data over line 421 and outputting the same over line 425, the next time the same electronic coupon message is received on line 244, a comparison is positive in comparator 401, and line 403 becomes a logical 1 and line 315 becomes a logical 0, turning off the AND gate 305 (Figure 6) and preventing the message from being recorded onto the user's Q-Card™. This condition will continue until the time interval has passed i.e. until the date in the electronic coupon stored in memory 419 becomes less than the real time date on line 312. A date comparator 428 thus receives just the date field from the messages being scanned through interface 417 on line 427. When the real time date exceeds the date stored in the electronic coupon in memory 419, comparator 428 outputs a logical 1 on line 429 which is sent to memory interface 417 so as to erase the contents of memory 419 for that particular electronic coupon. Thus, when the user attempts to again use the coupon and the restricted time interval has passed, comparator 401 will not find a comparison, and

the system operates as if the message were received for the first time as previously discussed.

5       The limit code byte in field 274 (Figure 5) in the retail coupon purchase information section 252 operates in a manner similar to that just described with respect to the interval timer. That is, instead of comparing dates and updating dates within the interval timer 313, a quantity comparator and quantity update function is carried out in a similar functional block (not shown). For example, upon  
10 first usage, there is no limit involved, and the output (corresponding to line 315) will be a logical 1 enabling recording of the electronic coupon on the user's Q-Card™. Simultaneously, a counter is set to the number in the limit code field 274, and the comparison at a comparator (similar  
15 to that of comparator 401) will again pass the electronic coupon to the Q-Card™ until such time as the counter reaches 0, at which time a comparison will be sensed, and the output of the limit code detector will inhibit further recording of the electronic coupon on the user's Q-Card.

20       It should be noted that the electronic coupon information being transmitted by the TV station includes an alpha-numeric description of the product and discount amount to be displayed on the TV screen. This alpha-numeric information is stored in memory 128 along with  
25 other information fields (Figure 5) and is also available to the user in the edit mode. However, when recorded on the Q-Card™ for redemption, only the fields discussed in connection with Figure 5 are transferred to the card, since such alpha-numeric descriptive data is not needed by the  
30 redemption center.

      The redeeming of the coupon at the redemption center (e.g. retail store) can be implemented in a number of ways. Figure 8 shows one way. A user will enter the retail store and find the coupon redemption desk upon which a Q-Card™  
35 writer/reader is conveniently located. A user wipes his or

her Q-Card™ through the slot of writer/reader 501, and the information is interpreted by coupon ID decoder 507 and sent to a customer information reader 509 and coupon memory 511. The information sent to reader 509 records significant information from the Q-Card, such as the user's name, address, zip code, product being purchased, limit on number of purchases per visit, etc. This information can later be used by the retail outlet or the manufacturer to intelligently make adjustments to its marketing efforts. The limit on purchases is obtained from the LIMIT CODE field 274 (Figure 5) in the coupon message, as an alternate use for field 274 discussed earlier. The coupon memory will contain information inputted by a modem or floppy disk from the manufacturer, and/or through a keyboard 518 by an operator of the retail establishment so that a comparison can be made with the information being decoded from the user's Q-Card™. When a match is made, the printer driver interface 515 sends the electronic coupon information to a printer 517 which may print a hard copy of the electronic coupon containing not only the product and discount information but also directions as to which aisle or other location in the store the product can be found, and, optionally, dependent upon application, a bar code for use at the cash register.

Figure 9 indicates that, instead of a dedicated stand-alone retail store unit, the Q-Card™ writer/reader 601 can be interfaced with the retail's mainframe computer 607 via write and read lines 603 and 605, respectively. Writer/reader 601 may be of the type which draws a users card in and holds it in the machine until the transaction is completed. The card is then released. Additionally, as explained earlier, a cash register/sales slip printer 609 can be configured to receive (via the computer 607) the user's Q-Card™ data directly without having to print a paper coupon to be read by an optical scanner which would slow down the checkout process. However, even if the electronic coupon is to be redeemed by the user by sliding

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his or her card through a Q-Card™ reader at the cash register, with the amount automatically being deducted from the products being rung up by the cashier, it is still a convenience to the customer for the store to provide an electronic coupon convenience desk at a readily accessible location near the entrance to the store, so that the user can wipe the card through the slot of the reader and obtain valuable information as to the availability of the product and its location in the store. The two systems can operate totally compatible with one another or independently. In either case, the entire process through checkout is much more streamlined over the clumsy, complex and time-consuming manual process of redeeming cut-out coupons in existence today.

Since the user may want to redeem some coupons and not others recorded on the card, a memory matching file 611 is provided which receives all of the electronic coupons from the user's card at the beginning of checkout. At the end of checkout, all of the products for which electronic coupons existed on the card are compared with the full list in memory matching file 611, and any unused coupons will automatically be written back to the card.

The description of Figures 10-12 which follows relates to the embodiment of the invention wherein the television set is a closed-caption modified TV set having built-in closed-caption circuitry hereinafter referred to as a closed-caption chip. Since the invention does not require a decoder chip when used with such a TV set, the external (to the TV set) circuitry comprising the invention will be referred to hereinafter as an electronic coupon home unit subsystem, or simply subsystem. Also, hereinafter, the term "modified TV set" refers to a TV set having internal closed-caption circuitry, i.e. the TV set is manufactured or serviced to be "closed-caption ready".

With reference to Figure 10, as hereinbefore described, the input to the TV set can be either baseband video or antenna or cable box rf output. If the input is video, it is shown to be inputted to the modified TV set  
5 700 on line 49, and if rf, the input on line 47 is converted to video in the rf-to-video converter 701. An electronic video switch 703 (or mechanical switch - not shown) selects one of the video inputs for output to be ultimately fed to closed-caption decoder chip 707. Decoder  
10 chip 707 extracts the digitally encoded closed-caption information in horizontal line 21 of the vertical blanking interval which is reserved on a first priority basis for the hearing impaired. The output of decoder chip 707 is the alpha-numeric data which is ultimately routed to a  
15 video mixer 711 which has the appropriate circuitry for mixing (for visual presentation) the alpha-numeric information on line 710 with the selected video information on line 706 and outputting the mixed signal to the TV monitor 713 which displays the closed-caption information  
20 superimposed over the picture on the TV screen for reading by hearing impaired. Obviously, additional circuitry not described herein is necessary to accomplish the display of closed-caption information on the picture, such as circuitry for synchronization, circuitry for giving  
25 priority to the closed-caption information so as not to be obscured with picture details, etc. The block diagram of Figure 10 is merely representative of one scheme for displaying closed-caption information on a video screen, and there are many other functional diagrams which could be  
30 drawn to get the same results. It is sufficient for this description, however, to indicate that, within the modified TV set, there is a routing of baseband video to the closed-caption decoder chip 707, there is a means for combining the video picture information with the decoded closed-  
35 caption message, and there is a means for displaying the information on a TV monitor screen. All of these functions and signal paths will be standard in future modified TV set production.

For operating with the present invention, the modified TV set must be further modified or "adapted" to interface with the electronic coupon subsystem 1a. The manufacturer of the modified TV set must make the following changes for such compatible interfacing. First, the video signal entering the closed-caption decoder chip 707 must be interrupted as shown by switch 705 in Figure 10, which may be an electronic or mechanical switch having an internal position and an external position. Although not necessarily required, switch 705 is shown to be a double pole/double throw switch which, in the internal position (solid arrows) passes the video signal directly to the decoder chip 707 and video mixer 711. In the external position of switch 705 (dotted arrows), the video out of electronic video switch 703 is routed to a connector 725 on the modified TV set, preferably on the back panel thereof. The video signal passes through a multi-wire cable 727 to the subsystem 1a which passes the video signal on line 109a to the video input of message controller 115 described earlier in connection with Figure 3. Message controller 115 adds the coupon logo on line 120 to the video signal on line 109a and outputs the mixed video signal on line 137a and routes it back through the switch 705 to then be distributed to the closed-caption chip 707 and video mixer 711 on line 706 in the modified TV set 700. The purpose for the path out of and into the modified TV set as just described is for adding the coupon logo to be visible on the TV monitor 713 when a coupon message is being decoded by closed-caption decoder chip 707.

It will be appreciated that the logo is generated by logo generator 118 only upon detection of an electronic coupon message being contained within the television transmitter signal, also as earlier described. The determination as to whether or not a coupon logo is to be displayed is made by message sensor 114 which, as described in connection with Figure 3, analyzes the decoded message data, and if an electronic coupon message is being

transmitted, the message sensor 114 outputs an enable signal on line 116 to cause logo generator 118 to output the logo signal on line 120 to message controller 115. In Figure 3, message sensor 114 receives the decoded alpha-numeric data from message decoder 111. Since that function (message decoder) is now contained in the modified TV set 700, it is necessary to provide an output from the modified TV set 700 to carry the decoded alpha-numeric message into the electronic coupon subsystem 1a, and this is done by sending the output of decoder chip 707 through cable 727 into subsystem 1a on line 112a to the input of message sensor 114. With this additional adaption of the modified TV set 700, the functioning of message sensor 114, logo generator 118, and message controller 115, operate in the same manner as described in connection with Figure 3. It will be recalled, that as confirmation to the user that a coupon message has been successfully stored in the coupon message memory, control circuit 117 (Figures 3 and 11) sends a confirmation signal back to logo generator 118 on line 116a which changes an attribute of the logo, e.g. it may change to a solid field circle, or it may change the color of a part of the logo. That same analysis applies to the subsystem 1a.

Obviously, the hearing impaired will want the closed-caption information to be displayed on TV monitor 713 at all times. People without hearing impairment will want to defeat the closed-caption function. For that purpose, each modified TV set 700 will be provided with an on/off button 719 which would interrupt the flow of decoded closed-caption information from reaching video mixer 711. On the other hand, if an electronic coupon is being transmitted and decoded by decoder chip 707, with the closed-caption on/off button 719 in the "OFF" position, the coupon message must necessarily still be shown on the monitor 713. To accommodate this function, Figure 10 shows the addition of some logic gates, an i.e. OR gate 717, and an AND gate 709. Again, this is only one possible implementation of the



function, and any other arrangement which would permit the display of coupon messages on the screen when the closed-caption function is not selected by the user, may be used. Functionally, then, in the normal operation of modified TV set 700, the closed-caption information out of decoder chip 707 is sent along line 712 to the input of AND gate 709. It will not pass through gate 709 unless the input on line 714 is high. Line 714 can be brought to the high logical state by providing a high level input on line 720 from the closed-caption on/off button 719. Since gate 717 is an OR gate, the flow of closed-caption data through AND gate 709 will be directly controlled by the user pushing the on/off button 719, and this operation would be, functionally, identical to that if the modified TV set outputted the closed-caption information directly from decoder chip 707 to the input of mixer 711.

As mentioned in connection with the description of Figures 3 and 4, when the user observes a logo being displayed on the TV monitor, he or she has the opportunity to press a button on the remote control device 43 (identified as "VIEW"), and the video message from decoder 111 would be passed through video switch 209 to be added to the video picture on line 119 in video mixer 101 and displayed as a composite picture on the TV monitor. In the arrangement of Figure 10, however, the decoded coupon message signal is not generated within the subsystem 1a and is not mixed with the picture video signal as is done in Figures 3 and 4. Rather, those functions are performed in the modified TV set 700 itself. Accordingly, as opposed to combining the coupon message decoded signal, the logo, and the video picture signal together in the arrangement of Figures 3 and 4, Figure 10 shows a direct output of subsystem 1a on line 207 which is the "VIEW" signal referred to earlier. It will be recalled that the user initiates the "VIEW" command when a logo is present and the user wishes to view the coupon message on the screen. The "VIEW" signal is therefore identified as a "MESSAGE PRESENT

AND SELECTED" signal on line 207 which is routed through cable 727 to the modified TV set 700. There, the "VIEW" signal is inputted to a second input of OR gate 717. Due to the OR function, gate 717 passes the "VIEW" command onto line 714 as an alternate enablement signal to AND gate 709. As a result, either the on/off button 719, or the "VIEW" enablement signal on line 207 from subsystem 1a, will permit the decoded closed-caption signal to pass through AND gate 709 and be mixed with the picture video in video mixer 711. This means that closed-caption information can be displayed even when an electronic coupon message is not being transmitted, and, vice versa, electronic coupon information will be displayed on TV monitor 713 whenever the same is being transmitted and the closed-caption on/off button 719 is in the "ON" position. However, when the closed-caption on/off button is in the "OFF" position, the user is not presented with any closed-caption information on the monitor 713 until and unless the "VIEW" instruction is given.

In the description of Figures 2 and 3, a remote control device 43 was described. The control from such device affected the electronic coupon system home unit 1 in order to give the user flexibility in displaying, storing, and editing electronic coupon data. Since the modified TV set 700 will have to be adapted to operate with the electronic coupon subsystem 1a shown in Figure 10, a further, minor, adaptation of TV set 700 will serve to reduce the hardware requirements of subsystem 1a by simply tapping off of the infrared sensor 715 which normally controls TV functions within TV set 700 and sending the output of the sensor 715 through cable 727, along line 155a, as the remote control signal entering message controller 115, the operation of which is then carried out similar to that described in connection with Figures 2-4. In Figure 10, the remote control device 43a sends an infrared beam 44a to sensor 715 in the modified TV set 700, and the remote command conversion takes place in the

infrared sensor 715 to output the commands along line 731. In this manner, remote control device 43a and infrared sensor 715 substitutes for the remote control device 43, infrared sensor 153 and remote command convertor 151 shown in Figure 3. Since the remote control devices have a large number of possible codes, much greater than the number of functions to be controlled in TV set 700, there are sufficient codes available for additional control of the electronic subsystem 1a.

Turning now to Figure 11, it will be observed that this Figure is comparable to that of Figure 3 with simplified electronics and functional blocks due to the elimination of same by the fact that the decoding function and remote control function are carried out in the TV set 700 itself. The differences will be evident to one of ordinary skill in the art without a great deal of detailed discussion. For example, because the TV set 700 has its own tuner, there is no requirement for any rf-to-video or video-to-rf conversion in subsystem 1a. Input selector 103 (Figure 3) is also therefore eliminated. Video input is still required to be sent to control circuit 117, and this is shown in Figure 11 to be carried out by the connection to connector 723 of line 109a. The alpha-numeric information in Figure 3 is passed to control circuit 117 and message sensor 114 from decoder 111. In Figure 11, the alpha-numeric information is an input through connector 723 to line 112a which, again, serves as input to control circuit 117 and message sensor 114.

Another difference is that the video mixer 121 of Figure 3 combines the picture video, message data, and logo together to be sent to a TV monitor through display driver 139. In the subsystem 1a arrangement of Figure 11, the video mixer 121 need only combine the picture video information on line 119 and the logo information on line 120, and this combined signal is sent out line 137a to connector 723 where it is inputted to video mixer 711

(Figure 10) on line 706 with or without (selectively) the decoded information from decoder chip 707. Line 123 from control circuit 117 is still necessary for the display of stored messages from memory 128 in the manner previously described with reference to Figures 3 and 4.

Figure 12 shows the changes to control circuit 117 for the electronic coupon subsystem 1a as compared to the complete electronic coupon system home unit 1. In Figure 12, comparable to Figure 4, the input to video switch 209 has been eliminated, since the real time (not stored) alpha-numeric coupon message will be video mixed in mixer 711 in the modified TV set 700 itself and not in the electronic coupon box. Additionally, whereas in Figure 4 the "VIEW" signal on line 207 enabled video switch 209 to pass the alpha-numeric message onto the monitor ultimately, again that function is provided for in TV set 700, and therefore the "VIEW" signal on line 207 in Figure 12 is routed out of control circuit 117 directly as described in connection with Figure 10. For editing purposes, it is still necessary for video switch 209 to output coupon messages stored in memory 128, so that the "DISPLAY LIST" command enables video switch 209 in the same manner as described in connection with Figure 4. The signal on line 137a is therefore a combination of video, stored message readout (R/O), and logo signals.

The present invention is readily adaptable to accommodate inputting coupon information which is not electronically derived from a television signal. Importantly, ordinary paper coupons which a shopper would normally cut out of a magazine, newspaper, flyer, or the like can be electronically inputted to the electronic coupon system of this invention simply and conveniently and stored along with any other electronic coupon received by the television transmission channel, and redeemed in exactly the same manner. The process of inputting the printed coupon information into the system or subsystem

involves reading the bar code associated with the coupon or coupons. Bar codes are universally used by manufacturers and advertisers so that the amount of the coupon can be quickly deducted from the purchase price of an item by the electronic/laser reading devices at the checkout counter of most major retail outlets. A simple adaption of the present invention will permit entering the bar code into the system or subsystem 1 or 1a.

Figure 11 shows an alternate path for entering external data into the control circuit 117 over line 247. Alternative to, or in addition to, receiving input data from Q-Card™ writer/reader 133, control circuit 117 can receive its input from a wand base unit 800 which applies a data stream to line 247 by scanning a paper coupon bar code using a bar code wand 803. Wand 803 uses an infrared reading tip to be scanned across the bar code of a printed coupon, and the wand base unit 800 converts the retrieved bar code information to the proper digital format for inputting to control circuit 117 over line 247. Bar code readers of this type are known and so widely used as to make it unnecessary to describe in detail.

A typical wand unit would have a cable 804 connected between the wand 803 and the wand base unit 800. This type of device is commonly known in the art and is used extensively in the field of small personal computers for inputting bar code information more conveniently than with a keyboard. Also, such technology is already in practice today having reference to such devices as Federal Expresse's hand held bar code and alpha-numeric input/output scanners. Such devices are also used for inventory, game/toy usages, and usages by transportation companies.

For certain applications, it is unhandy to have a physical connection between the reading wand 803 and the base unit 800, and wands having a totally self-contained

data accumulation function are also well known in the industry. Such devices, rather than having a physical connection (using a cable 804) has the ability to scan a bar code and register it within the self-contained remote unit, and when the data has been gathered, the wand (hardwired or by infrared transmission) couples the data stored in the wand to the subsystem 1a. In Figure 11, the wand is inserted into a slot, such as that shown at 801 in Figure 11, and by pushing an enter button, such as button 805 in Figure 11, the data stored in wand 803 is outputted from the base unit 800 to line 247 the same as the unit having a wired connection between the wand 803 and base unit 800. Also, since the output of base unit 800 and the output of Q-Card™ slot 7 (Figure 11) can be applied to the same bus line 247 for entering into control circuit 117, a schematic representation illustrating that possibility is shown in Figure 11 by the common connection at the output of base unit 800 and the output of Q-Card™ writer/reader 133.

The coupon home subsystem 1a accepts stored paper coupon information by scanning wand 803 across specially formatted paper coupons such as in newspapers, magazines, and mail inserts. By placing the coupon wand 803 in the input/output storage pocket 801, the wand will act in the same manner as reloading the magnetic or smart card coupons in the home unit as previously described.

In order to control against coupon fraud and unapproved authorization, an access control code number from the coupon wand 803, or base unit 800, matching the resident home unit subscription code number shall take place prior to acceptance of the paper coupon data into the home unit subsystem 1a.

In the preferred embodiment of the invention, the data string and flag requirements will have the same basic format as the data string and flag requirements previously

described in connection with the complete home unit 1. Hence, the process of handling the coupon wand data, once inputted to the home unit subsystem 1a, functions in accordance with the applicable description of the invention shown in Figures 1-7.

The limited total number of alpha-numeric characters in a standard bar code strip will typically be less than that required to generate an electronic coupon for full utilization in the home unit. Consequently, other reduced data reading formats can also be used, such as, but not limited to, two-dimensional bar coding and alpha-numeric character scanner/readers.

It will be apparent to those skilled in the art that the specific circuits described in connection with Figures 10-12 can be substituted by other circuitry and even operate different functionally than those described above. However, the basic functioning of electronic coupon subsystem 1a and modified TV set 700 will be the same in order to implement the present invention, and those necessary functions are as follows: 1) it is necessary to interrupt the picture video signal path prior to reaching the closed-caption decoder chip and selectively add a logo signal and/or stored message information to be ultimately displayed on the screen of the TV monitor 713, and this function should be capable of being bypassed by either a mechanical switch, an electrical switch, or an automatic plug/receptacle interconnect arrangement, the latter performing the same functions as a switch when the connector from electronic coupon subsystem 1a is plugged into, or not plugged into, the connector 725 of the TV set 700; 2) the alpha-numeric message information from the decoder chip of the TV set 700 must be supplied as an input to the electronic coupon subsystem 1a; 3) a command (e.g. "VIEW"), must be accepted by the modified TV set 700 in order to selectively display output from the decoder chip which would include electronic coupon information; and 4) optionally, the infrared sensor of the modified TV set 700

should supply decoded remote control commands to the electronic coupon subsystem 1a. Various ways of accomplishing these functional goals will be evident to the skilled artisan, and the implementation of any scheme to perform the necessary and/optional functions listed above will be encompassed within the scope of the present invention.

It will be appreciated that, although the invention has been described on the basis of preferred embodiments of the invention, variations of the invention will become obvious to one skilled in the art having been exposed to the invention by the description of the preferred embodiments. For example, the same concepts as disclosed herein remain the same whether analog or digital signals are employed. Additionally, all of the timing and coordinating of functions within the encoder and decoder units can be carried out by operation of a microprocessor with only simple programming required to implement the invention. Accordingly, the invention is not to be limited by this description, but only by the scope of the appended claims.



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CLAIMS

1. An apparatus for decoding and storing messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, the video component of said television picture transmission being displayed as a picture on a video screen, said apparatus comprising:

decoding means for receiving said message component, and for decoding said encoded messages contained therein to produce a message signal containing said messages;

a logo generator for generating a logo signal to create a visible logo on the display of a video screen, said logo generator synchronized with said video component of said television picture transmission signal;

a video mixer receiving said video component of said television picture transmission signal, and receiving output from said logo generator for mixing said logo signal with said video component so as to superimpose said logo on said picture as viewed on the video screen;

means coupled to said decoding means for sensing the existence of a message signal, and enabling the coupling of said logo signal to said video mixer only during the time a message exists;

means coupled to the output of said decoding means for passing selected ones of said message signals to said video mixer for mixing said message signal with said video component so as to superimpose said selected message on said video component as viewed on the video screen;

storage means capable of storing at least a part of each message selected;

means for manually selecting ones of said displayed messages for storage in said storage means; and

means for storing said selected message in said storage means.

2. An electronic redeemable coupon generating system comprising:

encoding means for encoding coupon-related data as part of the information contained in a standard television signal transmission, said transmission including picture information, associated with said coupon-related data, for display on a television monitor screen;

decoding means for receiving said standard television signal transmission and for extracting said coupon-related data from said standard television signal transmission during display of said associated picture information;

means for selecting portions of the extracted coupon-related data and generating representations of such selected portions; and

recording means for recording said representations of said extracted coupon-related data portions on a recording medium for subsequent readout and coupon redemption.

3. A decoding unit for receiving a broadcasted standard television signal containing picture information for display on a television monitor screen, and further containing coupon-related data encoded as part of the information contained in said standard television signal, said decoding unit comprising:

means for extracting said coupon-related data from said standard television signal; and

recording means for recording representations of selected portions of extracted coupon-related data on a recording medium for subsequent readout and coupon redemption.

4. The decoding unit as claimed in Claim 3, wherein said recording medium is selected from the group consisting of magnetically striped cards, optical storage cards, and microchip cards, and said recording means is a writing device for writing information on said medium.

5. The decoding unit as claimed in Claim 3, wherein:

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said coupon-related data is associated in content with said television picture information being displayed; and

said means for extracting is operative to extract said coupon-related data during display of said associated picture information.

6. The decoding unit as claimed in Claim 3, comprising means for displaying predefined indicia on the television monitor screen responsive to coupon-related data being encoded in said television signal transmission.

7. The decoding unit as claimed in Claim 6, comprising user means, manually operated by a person using said decoding means, for selectively enabling and disabling extraction of said coupon-related data from said television signal transmission by said means for extracting.

8. The decoding unit as claimed in Claim 7, comprising:

memory means for accumulating selectively extracted coupon-related data; and wherein

said recording means is coupled to said accumulating means for storing representations of portions of said selectively extracted coupon-related data on said recording medium.

9. The decoding unit as claimed in Claim 8, comprising:

means for editing the contents of said memory means.

10. The decoding unit as claimed in Claim 6, wherein said predefined indicia is a logo which is displayed when said means for extracting detects that coupon-related data is encoded in the standard television signal.

11. The decoding unit as claimed in Claim 3, wherein said means for extracting includes pulse detecting means and pulse decoding means for detecting and decoding coupon-related data which has been pulse encoded within the vertical blanking interval of the standard television signal.

12. The decoding unit as claimed in Claim 11, wherein said pulse detecting means detects pulse coded information contained within a horizontal scan line of the vertical blanking interval of the television signal.

13. The decoding unit as claimed in Claim 7, wherein said recording means comprises:

means coupled to said memory means for retrieving coupon-related data stored in said memory means; and

a storage card writer and storage card, said storage card writer being coupled to said means for retrieving coupon-related data, for writing at least portions of said coupon-related data onto said storage card.

14. The decoding unit as claimed in Claim 13, comprising:

means coupled to said memory for reviewing all of said coupon-related data stored in said memory means; and

means for selectively deleting undesirable segments of said stored coupon-related data before said storage card writer writes said retrieved coupon-related data onto said storage card.

15. The decoding unit as claimed in Claim 8, wherein:

the coupon-related data contained in said standard television signal includes validation information; and

said decoding unit comprises authorization means for preventing storage on said recording medium by said means for storing, of selected coupon-related data not consistent with said validation information.

16. The decoding unit as claimed in Claim 5, wherein said predefined indicia is a logo, and said decoding unit includes means, responsive to said means for storing functioning to store a selected coupon-related data in said storage means, for altering an attribute of said logo in order to give a visual indication of a successful selection and storage of coupon-related data.

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17. An apparatus for decoding and storing messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, said message component being transmitted periodically, the video component of said television picture transmission being displayed as a picture on a video screen and including a visible logo in the picture area only when a message component is being transmitted, said apparatus comprising:

decoding means for receiving said message component, and for decoding said encoded messages contained therein to produce a message signal containing said messages;

a video mixer receiving said video component of said television picture transmission signal;

means coupled to the output of said decoding means for passing selected ones of said message signals to said video mixer for mixing said message signal with said video component so as to superimpose said selected message on said video component as viewed on the video screen;

storage means capable of storing at least a part of each message selected;

means for manually selecting ones of said displayed messages for storage in said storage means; and

means for storing said selected message in said storage means.

18. A decoding unit for receiving a standard television signal containing picture information for display on a television monitor screen, and further containing coupon-related data encoded as part of the information contained in said standard television signal, said decoding unit comprising:

means for extracting said coupon-related data from said standard television signal;

recording means for recording representations of selected portions of extracted coupon-related data on a recording medium for subsequent readout and coupon redemption; and

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means for displaying predefined indicia on the television monitor screen responsive to coupon-related data being encoded in said television signal transmission.

19. The decoding unit as claimed in Claim 18, wherein:

the coupon-related data contained in said broadcasted standard television signal includes broadcast source log information; and

said recording means records a representation of said broadcast source log information on said recording medium.

20. An apparatus for use with a television set having closed-caption display capabilities, said television set including:

means for decoding messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, the video component of said television picture transmission being displayed as a picture on a video screen on said television set, said decoding means receiving said message component and decoding said encoded messages contained therein to produce a message signal containing said messages;

a first video mixer receiving said video component of said television picture transmission signal, and receiving output from said decoding means for mixing selected ones of said message signals with said video component so as to superimpose said message on said picture as viewed on the video screen;

first means coupled to the output of said decoding means for passing selected ones of said message signals to said first video mixer for mixing said selected message signals with said video component so as to superimpose said selected message on said video component as viewed on the video screen; and wherein said apparatus comprises:

a logo generator for generating a logo signal to create a visible logo on the display of a video screen, said logo generator synchronized with said video component of said television picture transmission signal;

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a second video mixer receiving said video component of said television picture transmission signal from said television set, and receiving output from said logo generator for mixing said logo signal with said video component so as to superimpose said logo on said picture as viewed on the video screen;

second means coupled to the output of said decoding means in said television set for sensing the existence of a specific type of message signal, and enabling the coupling of said logo signal to said second video mixer only during the time a specific type of message exists;

means coupled to the output of said decoding means for passing selected ones of said specific type of message signals from said decoding means to said first video mixer for mixing said message signal with said video component so as to superimpose said selected specific type of message on said video component as viewed on the video screen;

storage means capable of storing at least a part of each specific type of message selected;

means for manually selecting ones of said displayed specific type of messages for storage in said storage means; and

means for storing said selected specific type of message in said storage means.

21. The apparatus as claimed in Claim 20, further comprising:

means coupled to said memory for retrieving messages stored in said memory;

a storage medium writer and storage medium, said storage medium writer coupled to said means for retrieving messages for writing at least a part of said message onto said storage medium; and

a message editor including:

means coupled to said memory for reviewing all of said messages stored in said memory, and means for selectively deleting undesirable ones of said stored messages before said storage medium writer writes said retrieved messages onto said storage medium.

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22. An electronic redeemable coupon selection system for use with a television transmission unit including encoding means for encoding coupon-related data in a standard television signal transmission including associated picture information for display on a television set monitor screen, and with a television set including decoding means for receiving said television signal transmission and means for extracting said coupon-related data therefrom during display of said associated picture information, said system comprising:

means, selectively enabled by a user, coupled to said decoding means in said television set for selecting portions of said coupon-related data, or not, at the discretion of the user during display of said associated picture information; and

recording means for recording representations of said selected portions of said extracted coupon-related data on a recording medium for subsequent readout and redemption.

23. The system as claimed in Claim 22, wherein said television set comprises means for displaying indicia on a television monitor screen responsive to message data being encoded in said television signal transmission, and said system comprises:

means coupled to said decoding means in said television set for selecting portions of said coupon-related data, said means for selecting including means for enabling and disabling said decoding means in said television set to display or not display, respectively, said indicia; and

recording means for recording representations of said selected portions of said extracted coupon-related data on a recording medium for subsequent readout and redemption.

24. The system as claimed in Claim 22, comprising:

means coupled to said decoding means in said television set for selecting portions of said coupon-related data, said means for selecting including user means, manually operated by a person using said selecting means, for selectively enabling and disabling mixing of said coupon-related data from said decoding means with said picture information; and



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recording means for recording representations of said selected portions of said extracted coupon-related data on a recording medium for subsequent readout and redemption.

25. The system as claimed in Claim 22, wherein:

the coupon-related data contained in said standard television signal transmission includes broadcast source log information; and

said recording means records a representation of said broadcast source log information on said recording medium.

26. An electronic coupon selection and storage unit for use with a television set receiving a television signal transmission containing picture information for display on a television monitor screen, and further containing encoded closed-caption data and encoded coupon-related data, the television set including a decoding unit comprising means for extracting said closed-caption and coupon-related data from said television signal transmission; and wherein said electronic coupon selection and storage unit comprises:

means for separating out said coupon-related data from said closed-caption data; and

recording means for recording said extracted coupon-related data on a recording medium for subsequent readout and redemption.

27. The electronic coupon selection and storage unit as claimed in Claim 26, comprising means for enabling the display of indicia on said television monitor screen responsive to coupon-related data being encoded in said television signal transmission.

28. The electronic coupon selection and storage unit as claimed in Claim 26, wherein:

the coupon-related data contained in said standard television signal transmission includes validation information; and

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said electronic coupon selection and storage unit comprises authorization means for preventing storage of selected coupon-related data on said recording medium by said means for storing upon detection of an inconsistency between said validation information and said stored coupon-related data.

29. An apparatus for selecting and storing messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, the video component of said television picture transmission being displayed as a picture on a video screen and including a visible logo in the picture area only when a specific type of message component is being transmitted, said apparatus connected to a closed-caption adapted television set which includes:

decoding means for receiving said message component, and for decoding said encoded messages contained therein to produce a message signal containing said messages;

a video mixer receiving said video component of said television picture transmission signal;

means coupled to the output of said decoding means for passing selected ones of said message signals to said video mixer for mixing said message signal with said video component so as to superimpose said selected message on said video component as displayed on the video screen; said apparatus comprising:

message sensor means capable of detecting the presence of a specific type of message being transmitted;

storage means capable of storing at least a part of each selected specific type of message;

means for manually selecting ones of said displayed messages for storage in said storage means; and

means for storing said selected message in said storage means.

30. The apparatus as claimed in Claim 29, including means, responsive to said means for storing functioning to store a selected message in said storage means, for altering an attribute

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of said logo in order to give a visual indication of a successful message selection and storage.

31. A television set modified to display closed-caption messages encoded in the signal of a television picture transmission, said television picture transmission containing video, audio, and message components, said television set adapted to interface with an electronic coupon subsystem and comprising:

a video monitor for displaying video and message information;

decoding means for receiving said message component and for decoding said encoded messages contained therein to produce a message signal containing said messages;

video mixer means for receiving said video component of said television picture transmission signal;

means for interrupting the passage of said video component to said decoding means and routing said interrupted video component to an output of said television set;

means for receiving said interrupted video component rerouted back to said television set as an input video signal, said input video signal being routed to the input of said decoding means;

means for routing the output of said decoding means to an output of said television set;

a first message control means for selectively interrupting the passage of said message signals to said video mixer means and passing selected ones of said message signals to said video mixer means for mixing said message signals with said video component so as to superimpose said selected message on said video component as displayed on the video monitor; and

a second message control means for interrupting the passage of said message signals to said video mixer means, said first and second message control means being capable of enabling passage of said message signals to said video mixer means independent of one another.

32. The television set as claimed in Claim 31, including:

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a user remote control device:

means for receiving user commands from said user remote control device and converting said commands to control function signals; and

means for routing said control function signals to an output of said television set.

33. An electronic redeemable coupon selection apparatus, for use with a television set having closed-caption display capabilities and including decoding means for decoding data transmitted with the picture information of a standard television signal transmission using closed-caption methodology, said television signal transmission including coupon-related data encoded using closed-caption methodology, said apparatus comprising:

means coupled to said decoding means for selecting at least portions of said coupon-related data; and

recording means for recording representations of said selected portions of said decoded coupon-related data on a recording medium for subsequent readout and redemption.

34. The system as claimed in Claim 33, wherein said television set comprises means for displaying indicia responsive to closed-caption data being encoded in said signal transmission, and wherein said means for selecting includes means for enabling and disabling said decoding means in said television set to display or not to display, respectively, said indicia.

35. The system as claimed in Claim 33, wherein said means for selecting includes user means, manually operated by a person using said selecting means, for selectively enabling and disabling mixing of said coupon-related data from said decoding means with said picture information.

36. An electronic redeemable coupon selection apparatus, for use with a television set including decoding means for decoding digital data transmitted with the picture information of a standard television signal transmission, said television signal

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transmission including digitally encoded coupon-related data, said apparatus comprising:

means coupled to said decoding means for selecting at least portions of said coupon-related data; and

recording means for recording representations of said selected portions of said decoded coupon-related data on a recording medium for subsequent readout and redemption.

37. The system as claimed in Claim 36, wherein said television set comprises means for displaying indicia responsive to digital data being encoded in said signal transmission, and wherein said means for selecting includes means for enabling and disabling said decoding means in said television set to display or not to display, respectively, said indicia.

38. The system as claimed in Claim 36, wherein said digitally encoded coupon-related data is recorded within a horizontal scan line of said standard television signal transmission.

39. An electronic coupon selection and storage unit for use with a television set receiving a television signal transmission containing picture information for display on a television monitor screen, and further containing encoded closed-caption data and encoded coupon-related data, the television set including a decoding unit comprising means for extracting said closed-caption and coupon-related data from said television signal transmission; and wherein said electronic coupon selection and storage unit comprises:

means for identifying said coupon-related data as distinct from said closed-caption data; and

recording means for recording a representation of portions of said extracted coupon-related data on a recording medium for subsequent readout and redemption.

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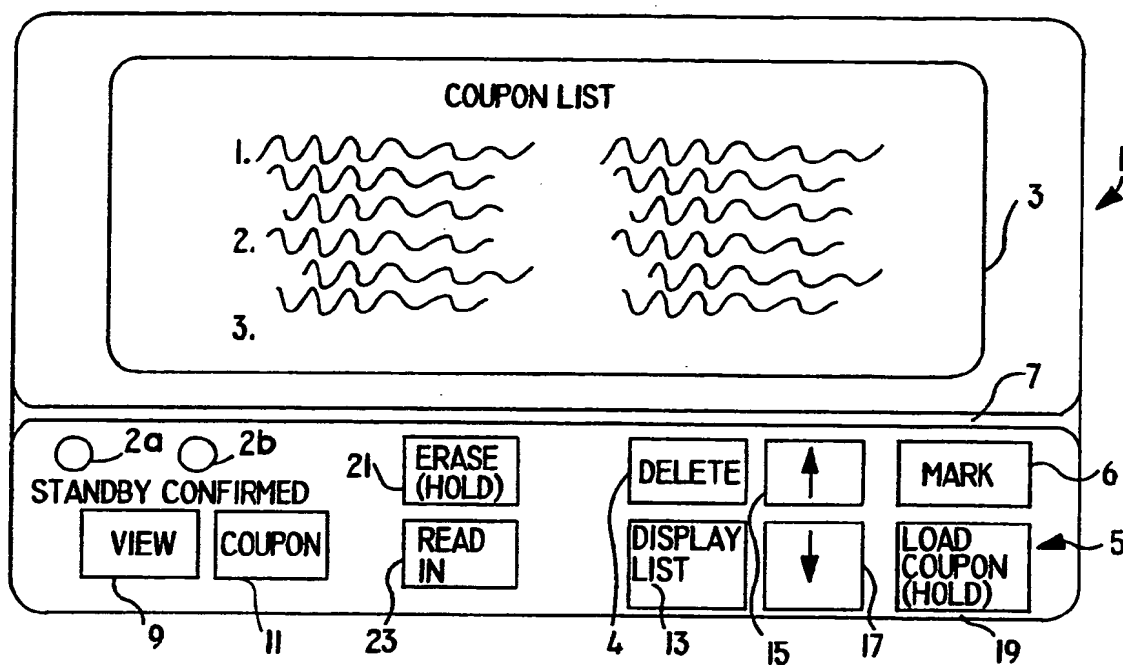


FIG. 1

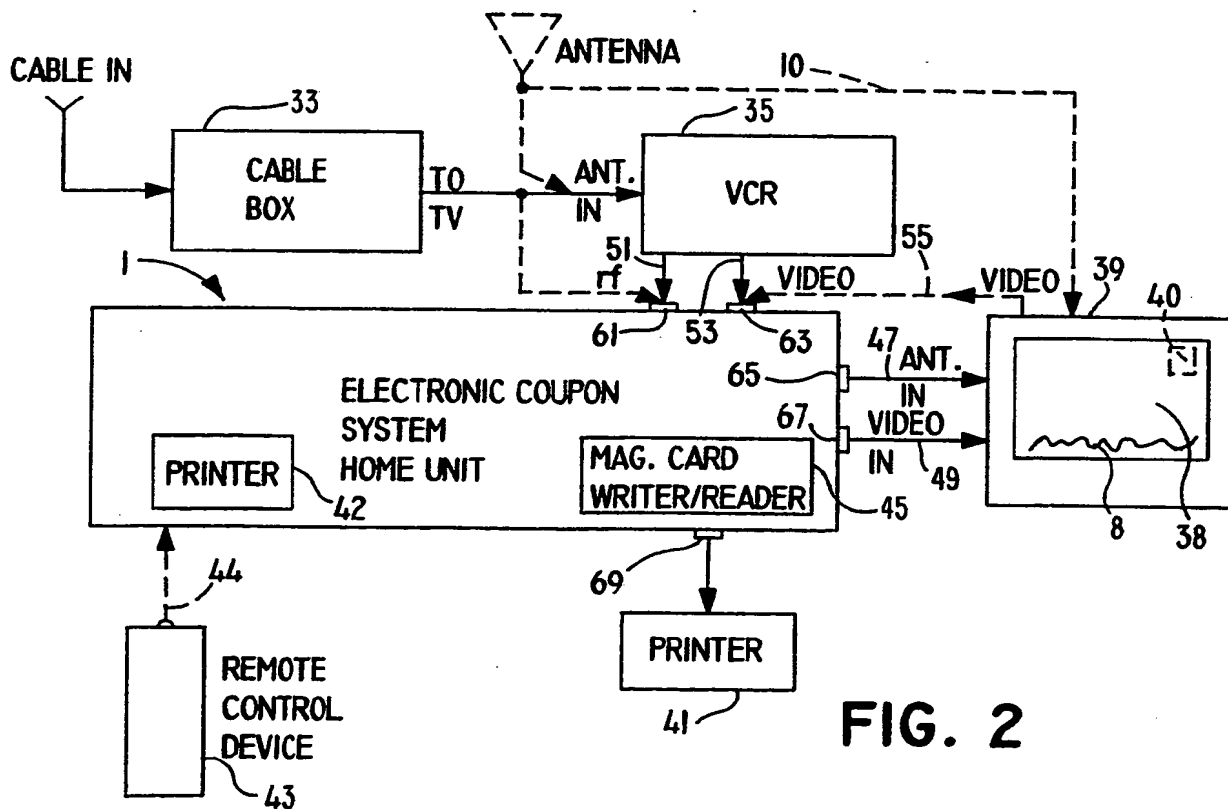


FIG. 2

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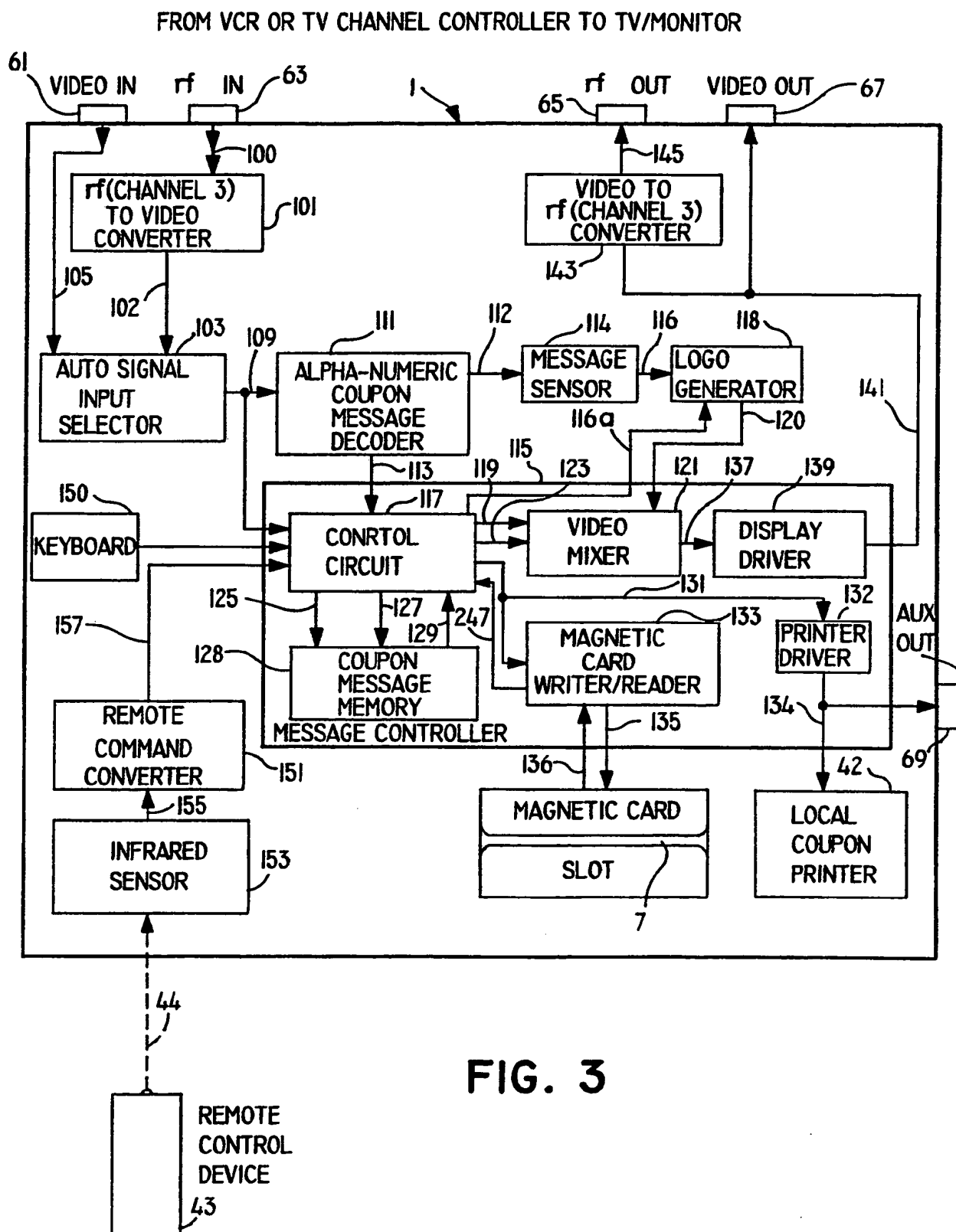


FIG. 3

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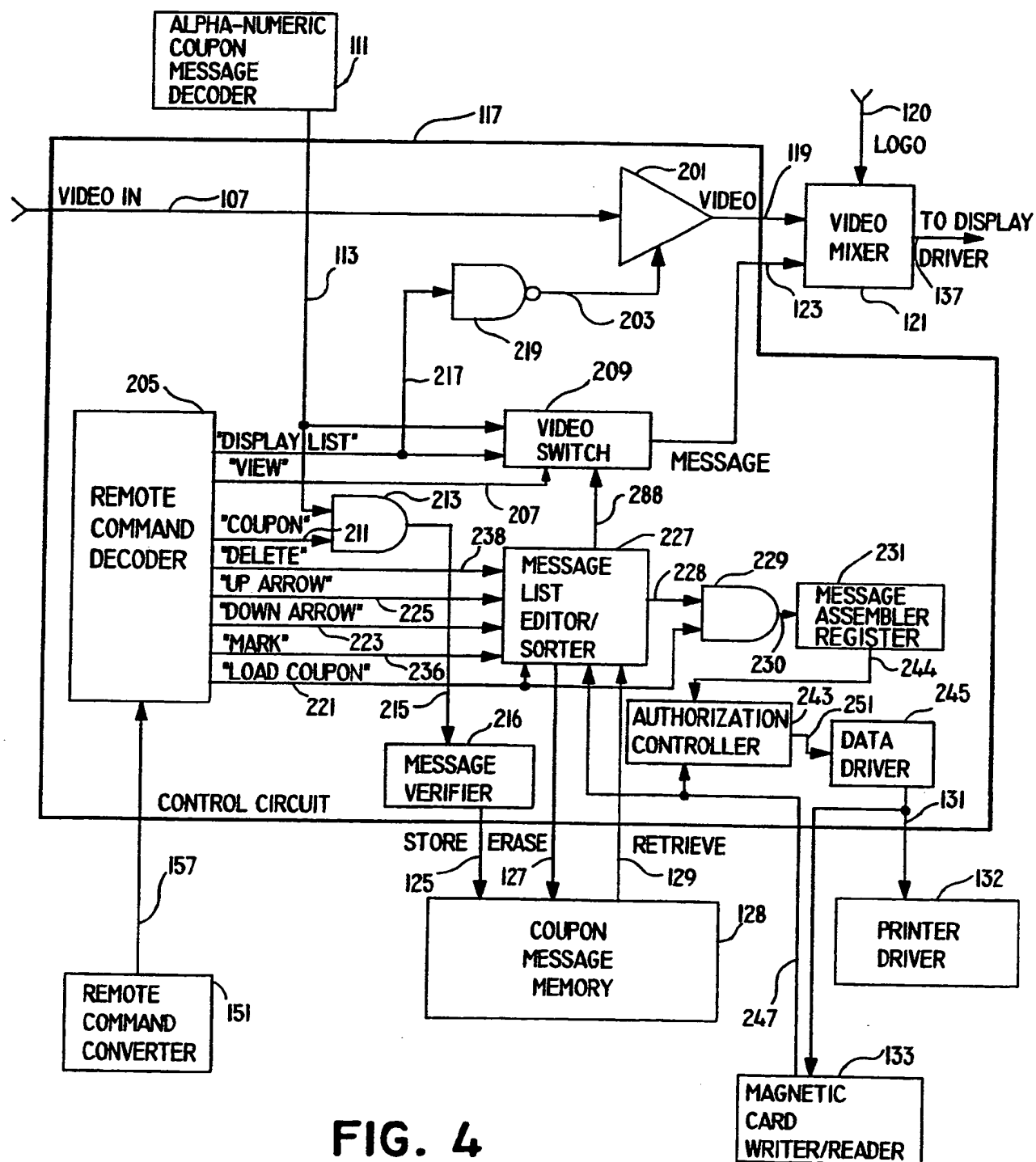
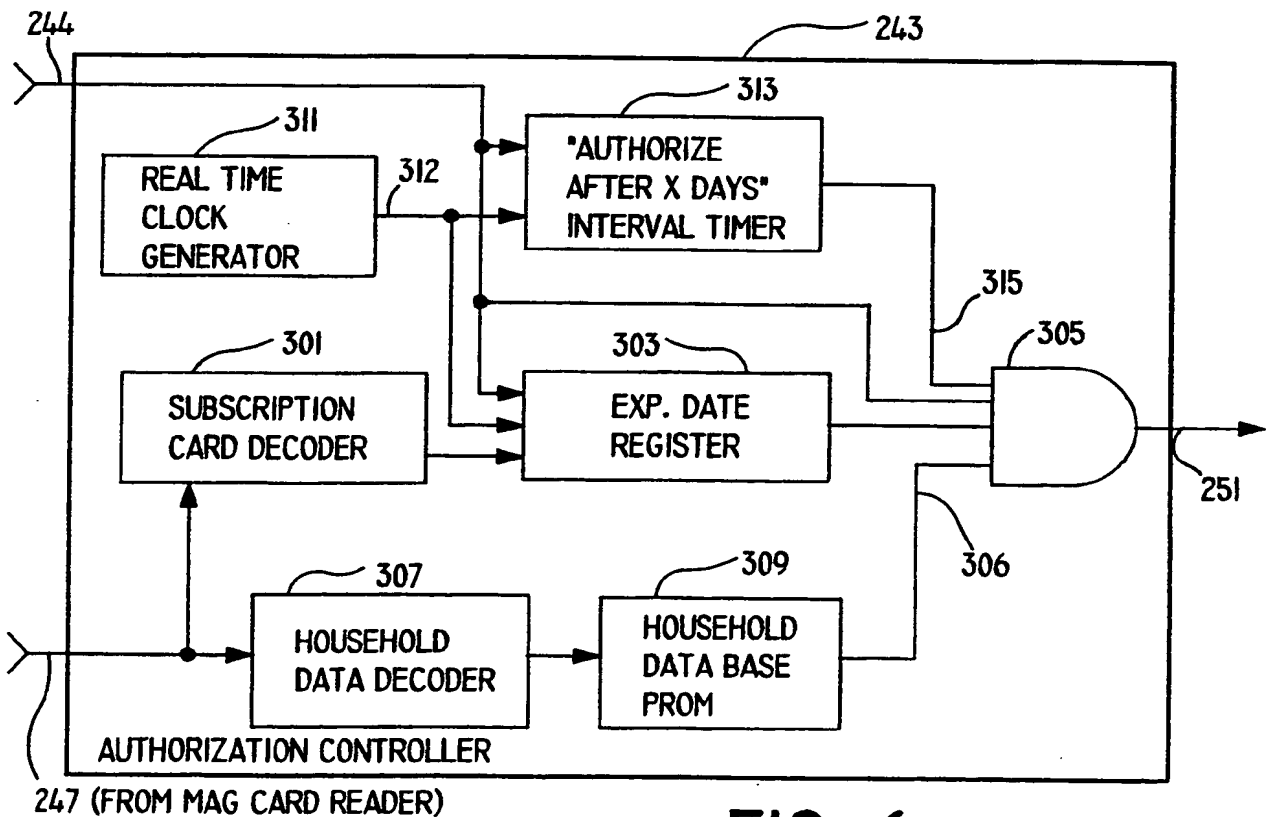
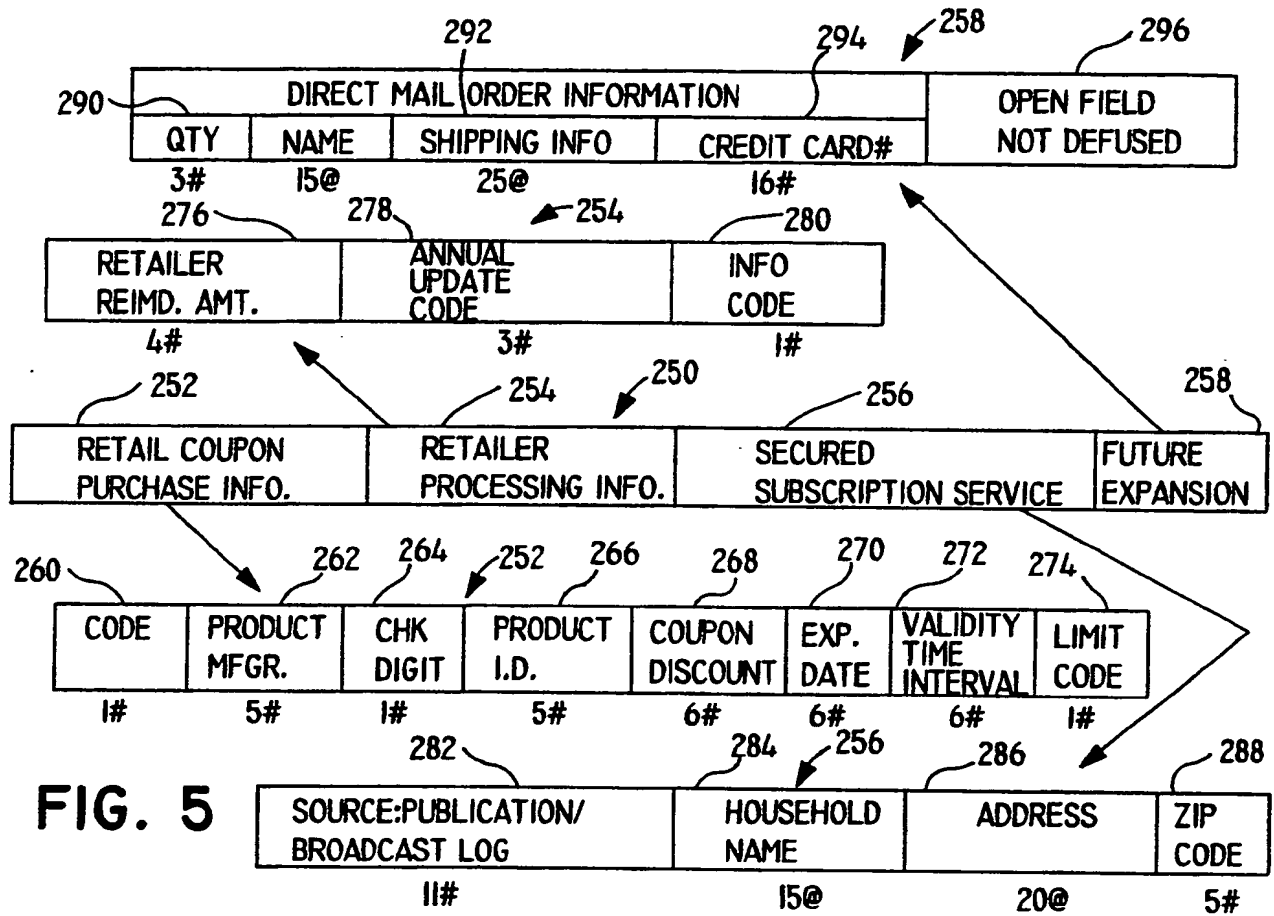


FIG. 4



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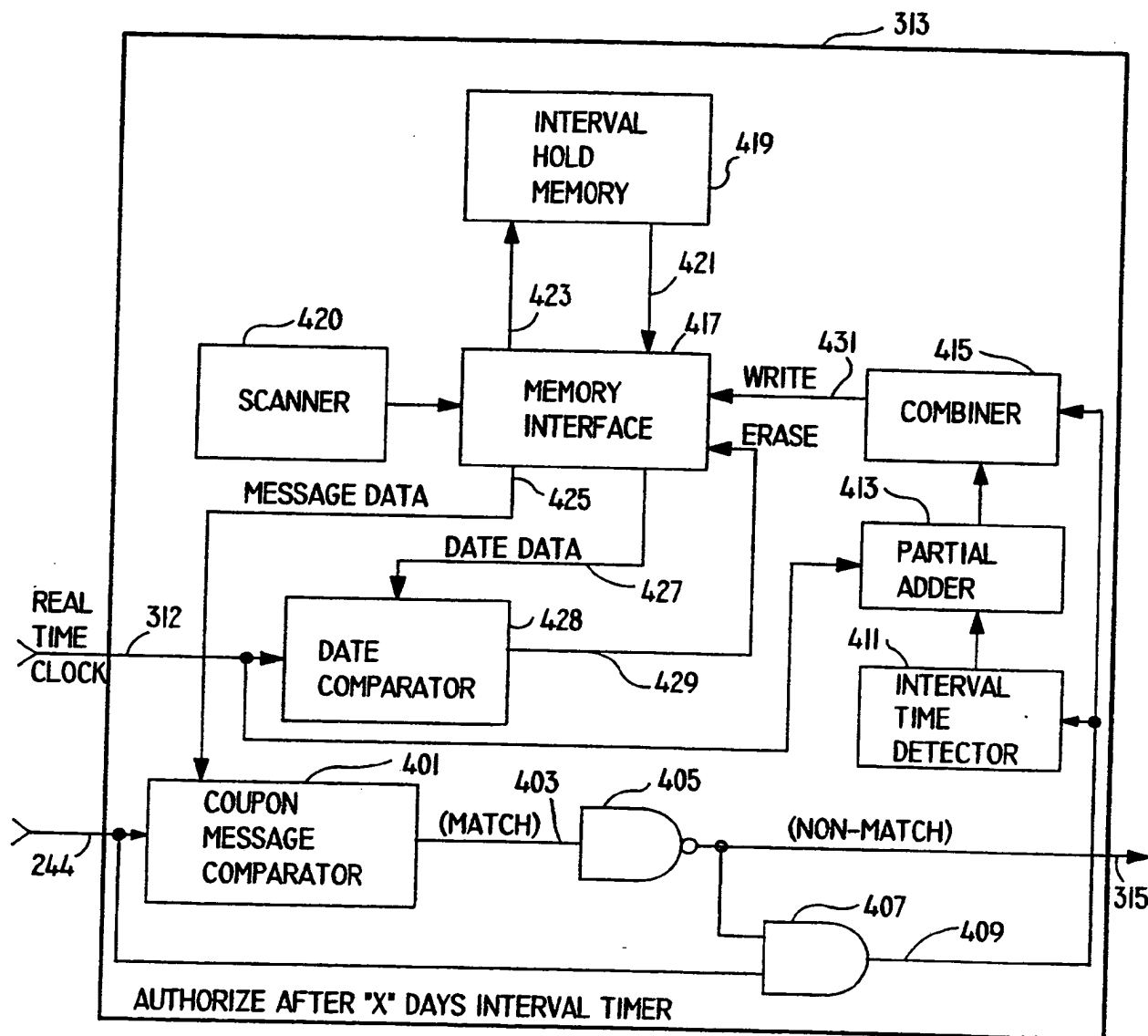


FIG. 7

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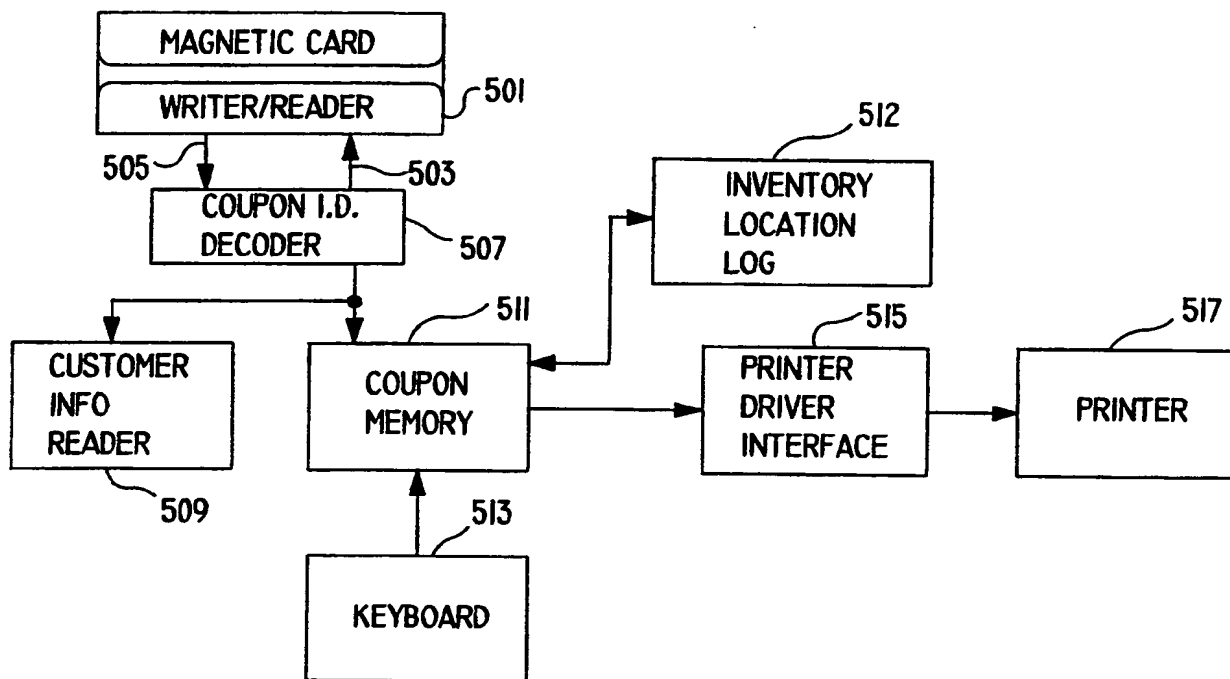


FIG. 8

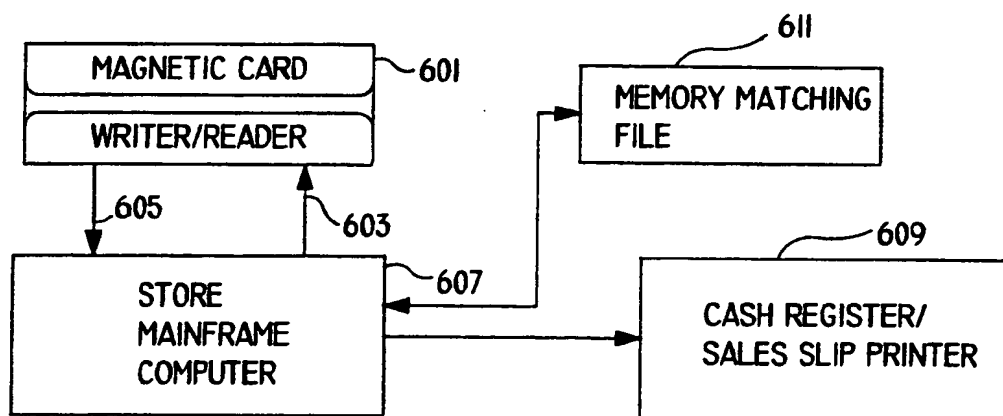


FIG. 9

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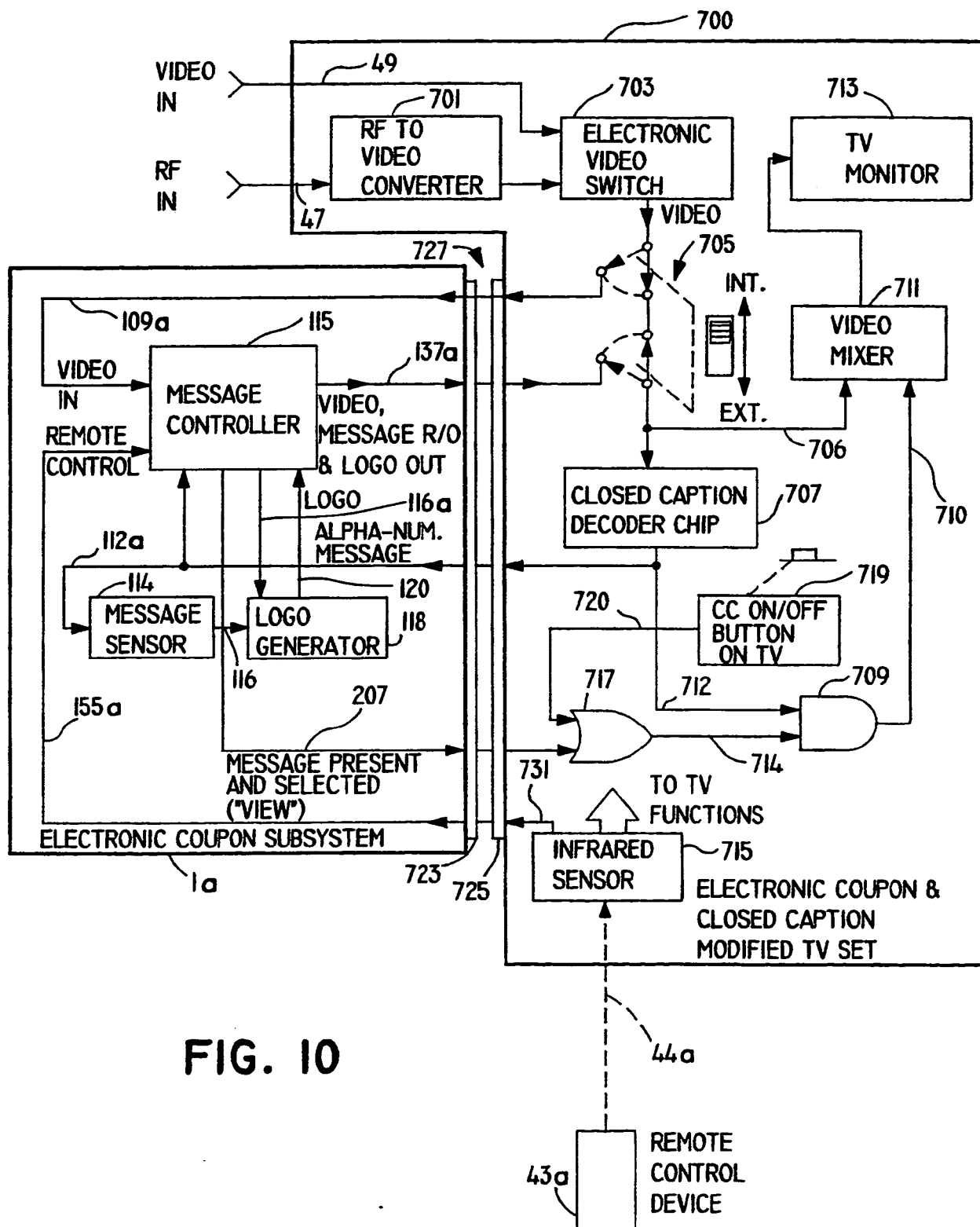


FIG. 10

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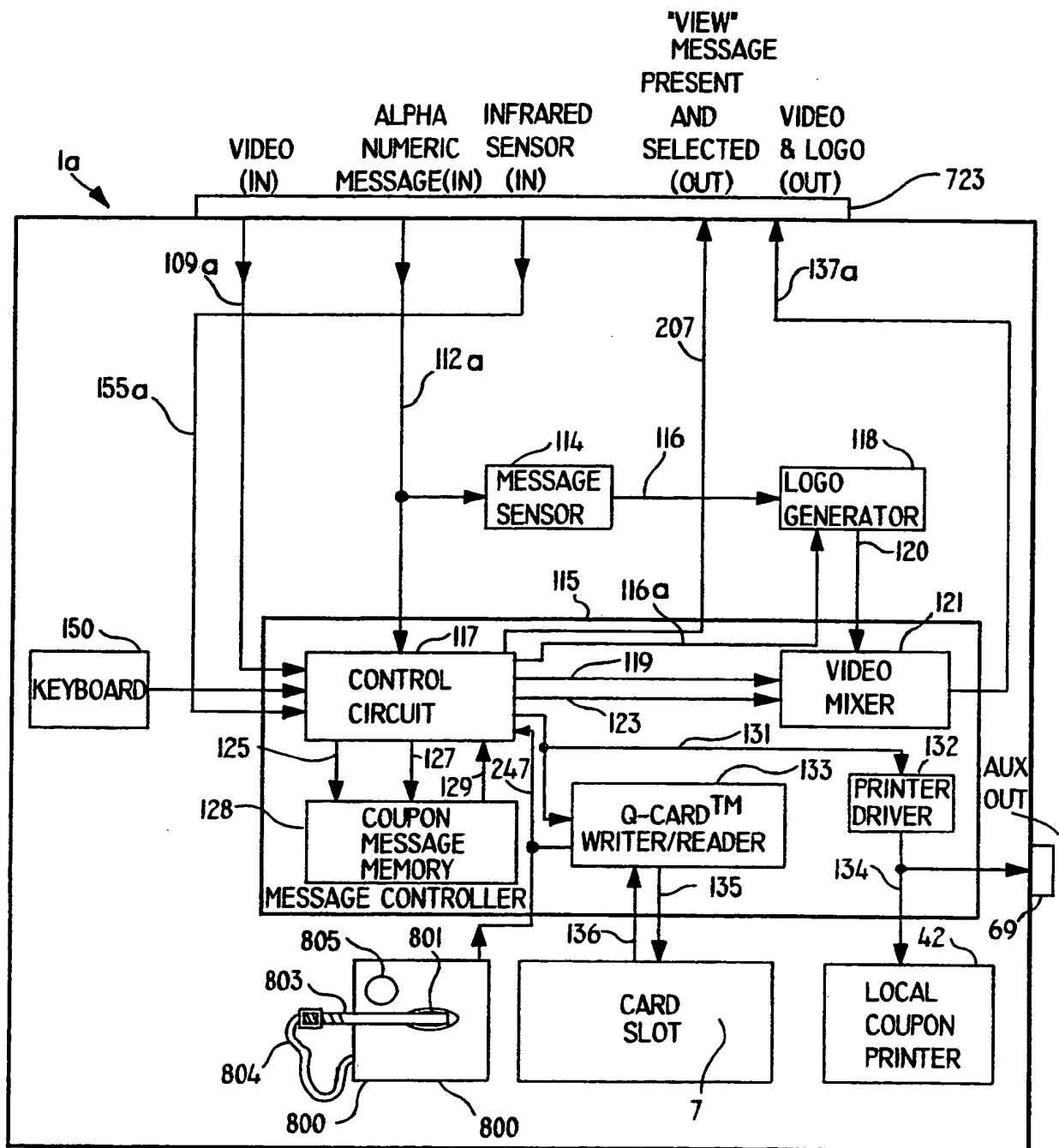


FIG. II

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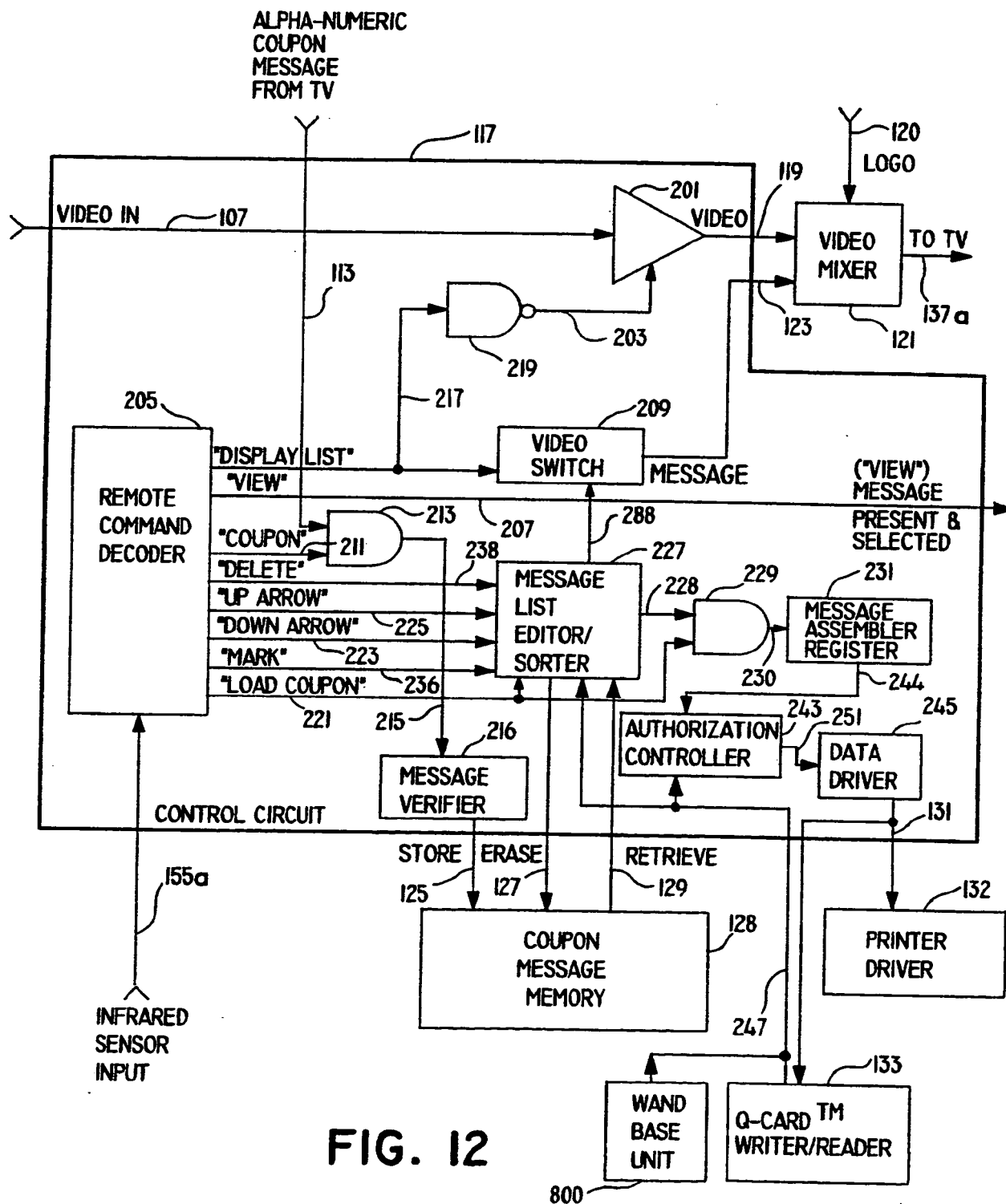


FIG. 12

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US93/04428**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(5) : H04N 7/08

US CL : 358/142

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 358/141,142,93,146,84,86,183; 455/2

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US, A, 3,848,082 (SUMMERS) 12 November 1974 col.7, paragraph 1	1-39
A	US, A, 5,014,125 (POCOCK ET AL) 07 May 1991	1-39
A	US, A, 5,070,404 (BULLOCK ET AL) 03 December 1991	1-39
A	US, A, 5,128,752 (VON KOHORN) 07 July 1992	1-39



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

\*A\* document defining the general state of the art which is not considered to be part of particular relevance

\*E\* earlier document published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\*

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\*

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\*

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

\*Z\*

document member of the same patent family

Date of the actual completion of the international search

23 JULY 1993

Date of mailing of the international search report

17 AUG 1993

Name and mailing address of the ISA/US  
Commissioner of Patents and Trademarks  
Box PCT  
Washington, D.C. 20231

Authorized officer

*Mark K. Powell*  
MARK POWELL

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Telephone No. (703) 305-4376

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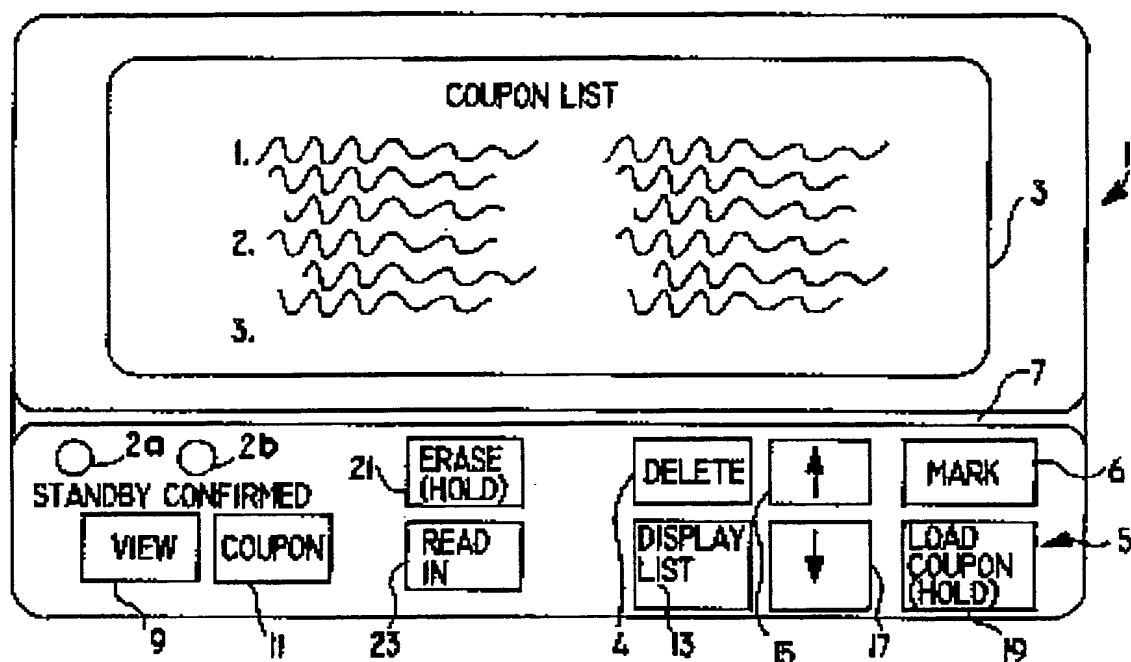


FIG. 1

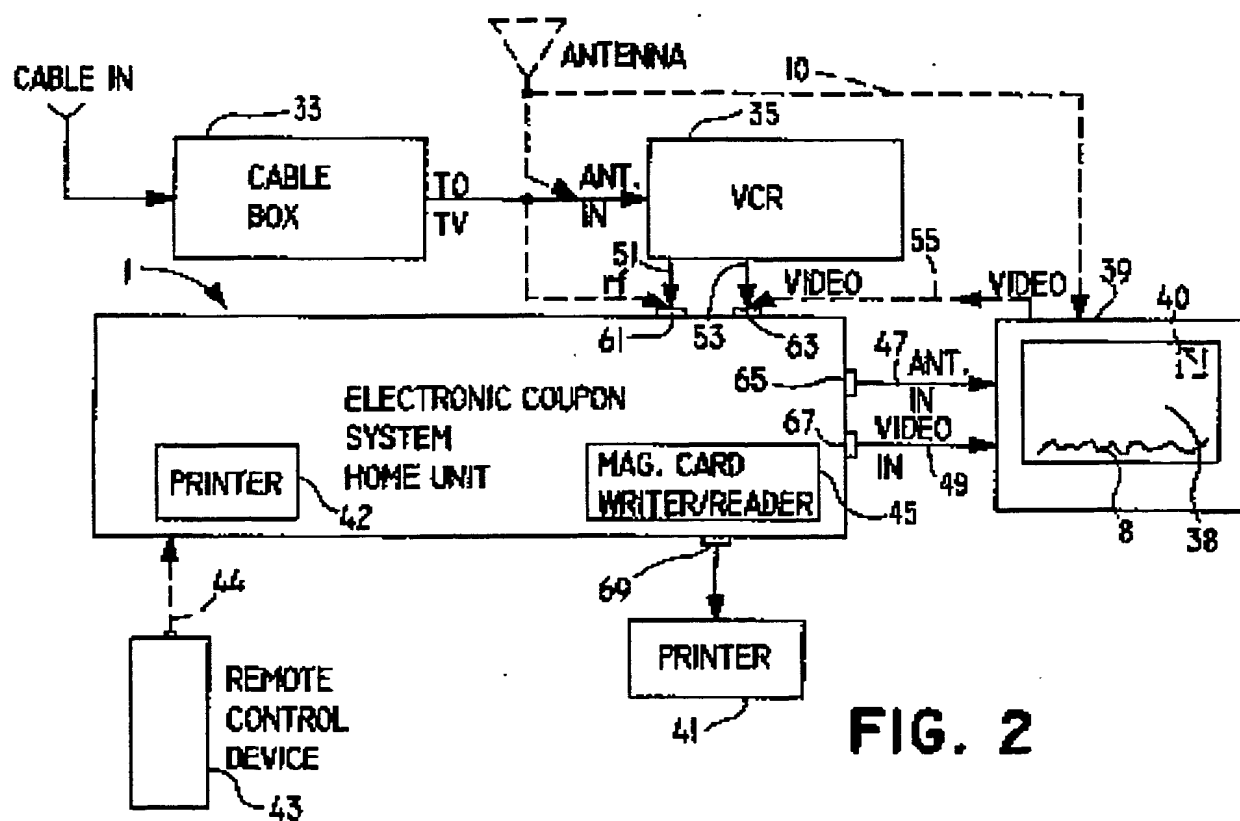
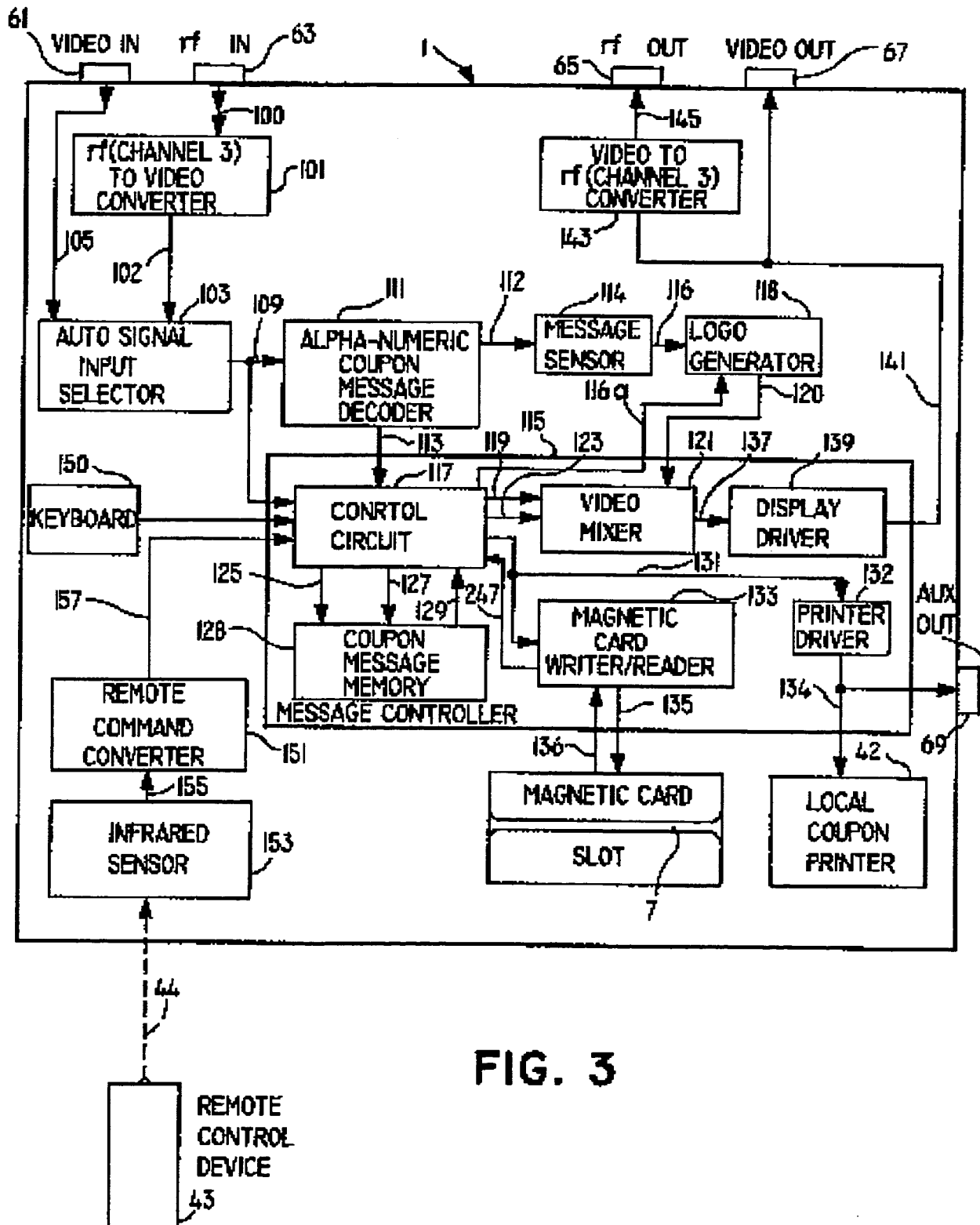
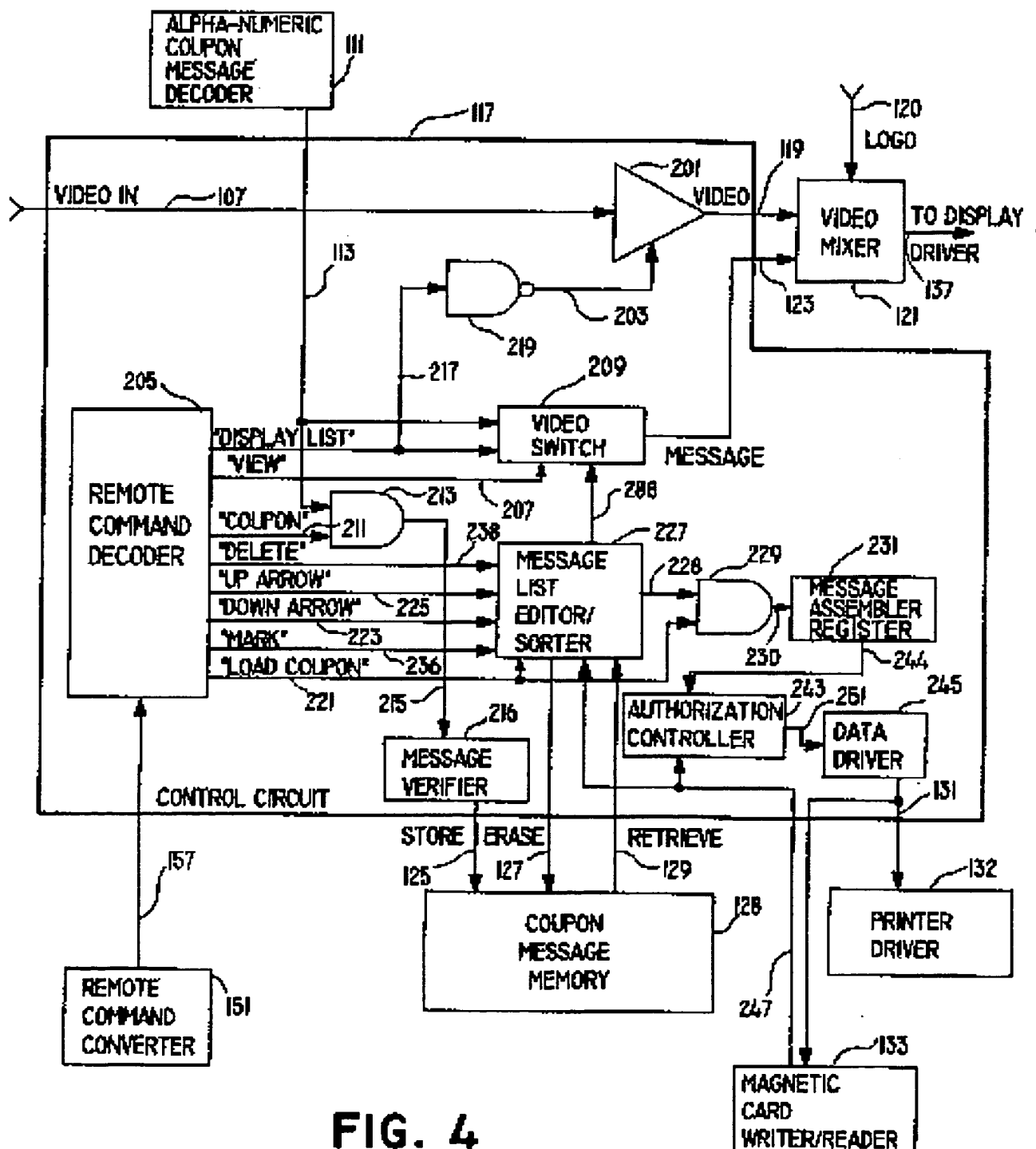


FIG. 2

### FROM VCR OR TV CHANNEL CONTROLLER TO TV/MONITOR



# SUBSTITUTE SHEET



**FIG. 4**

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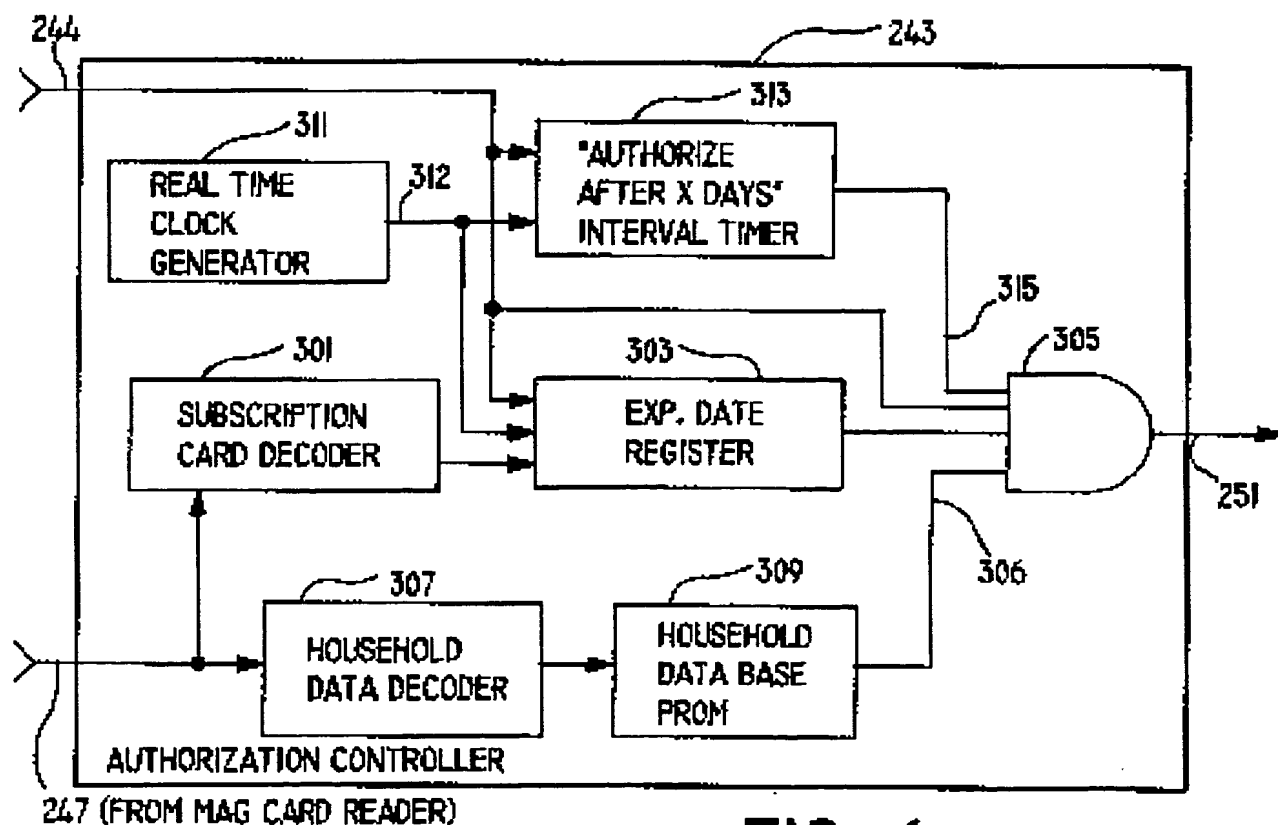
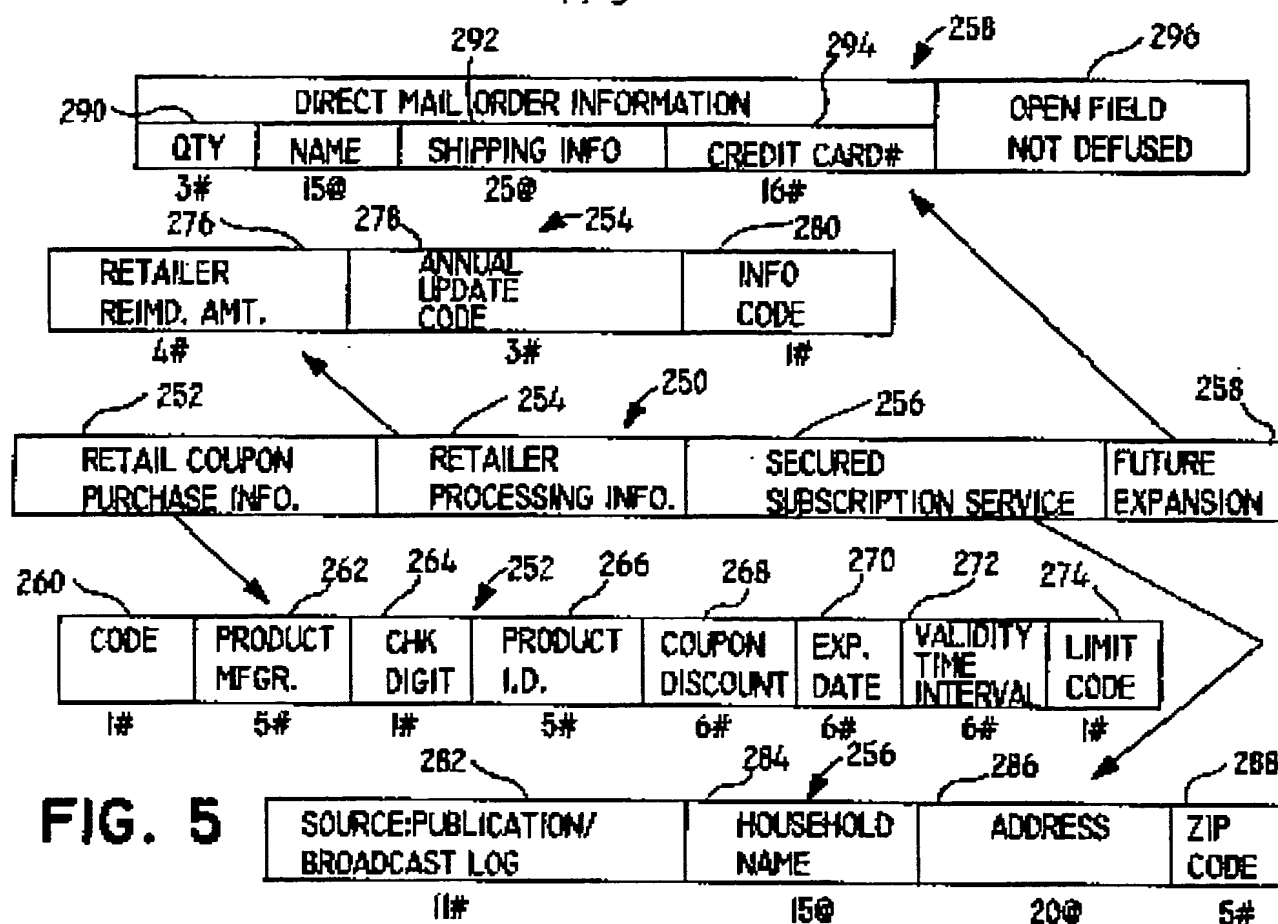


FIG. 6

SUBSTITUTE SHEET

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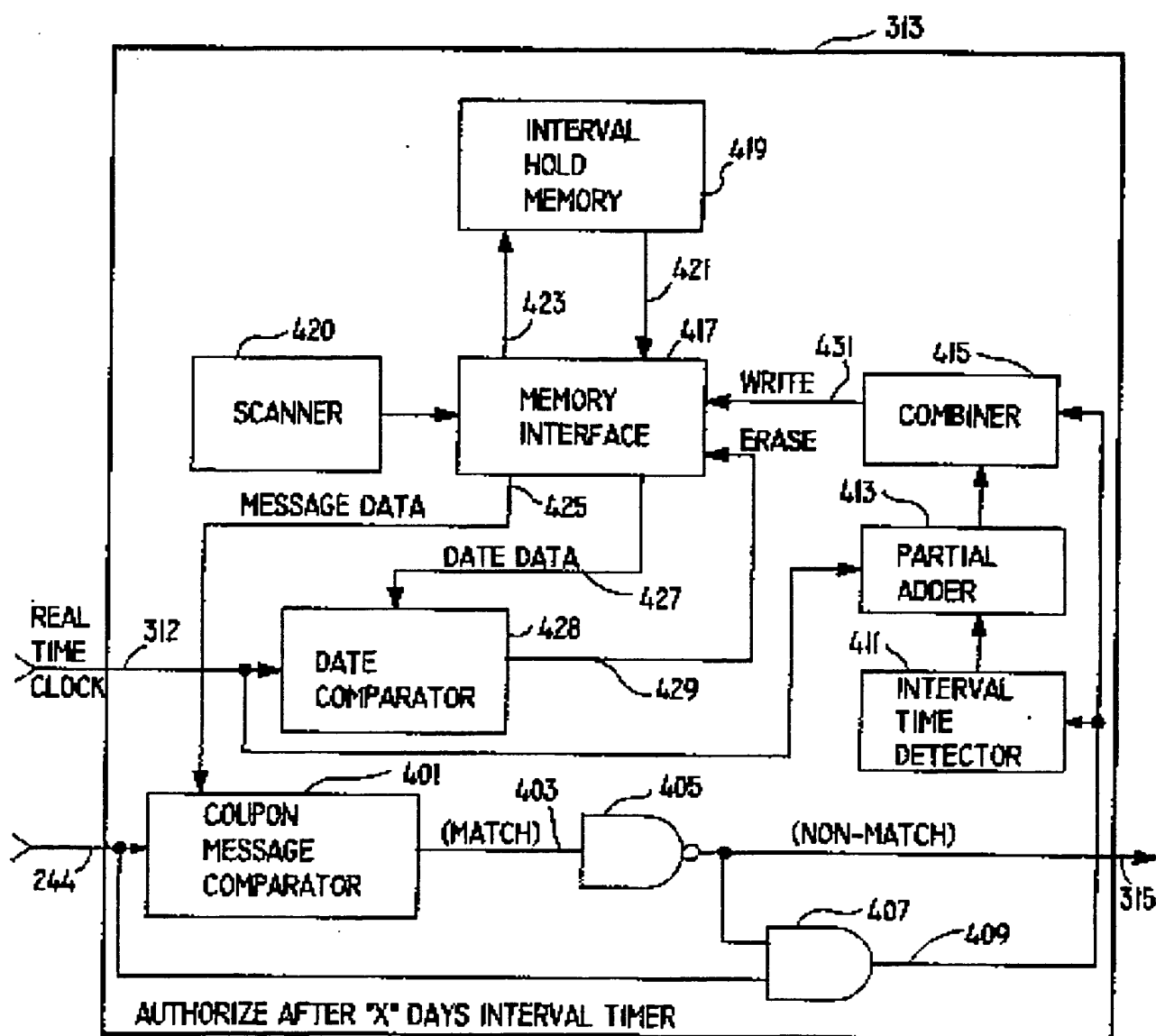


FIG. 7

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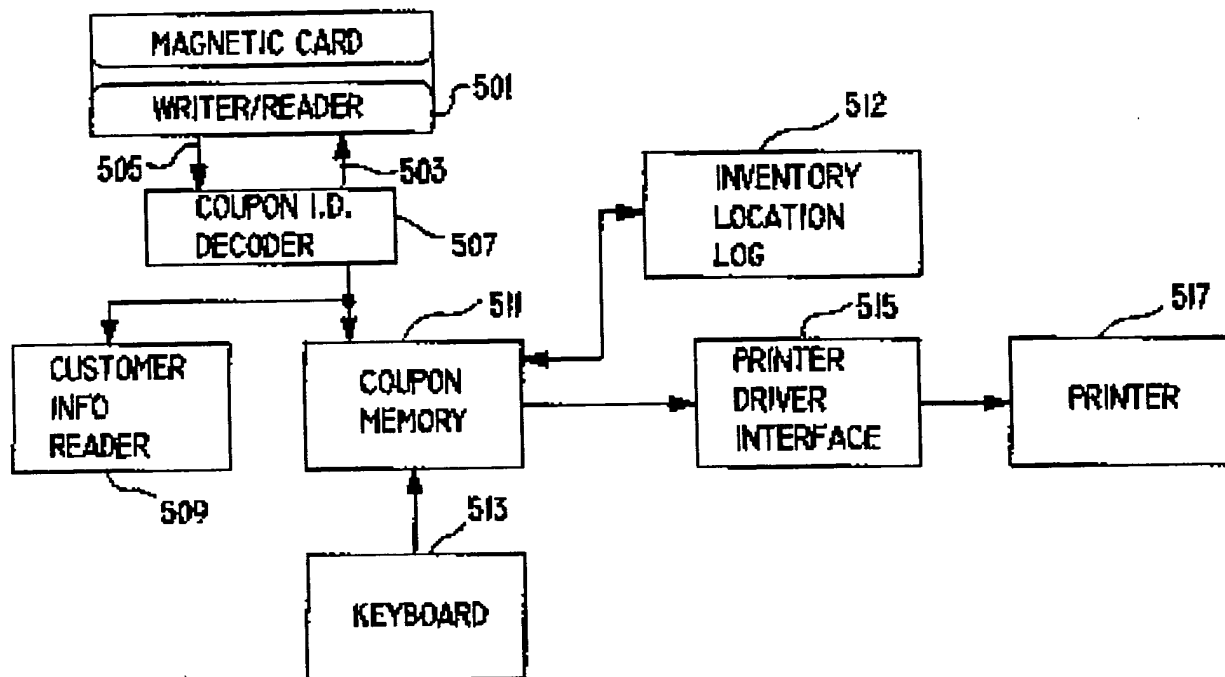


FIG. 8

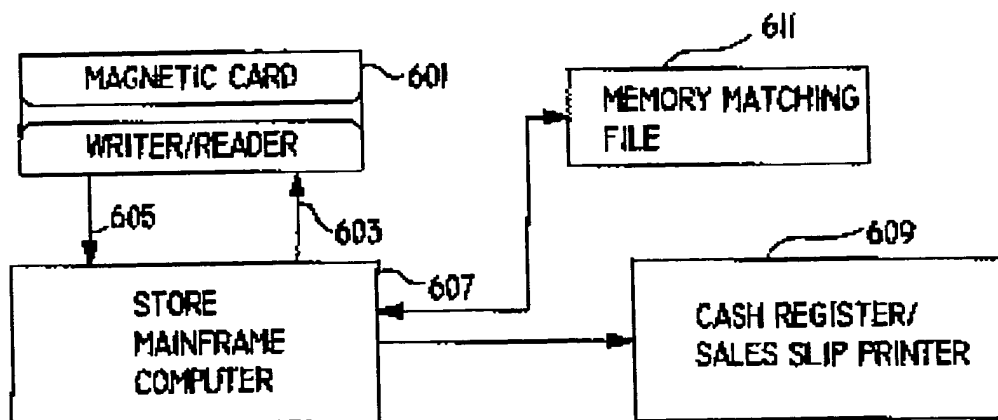


FIG. 9

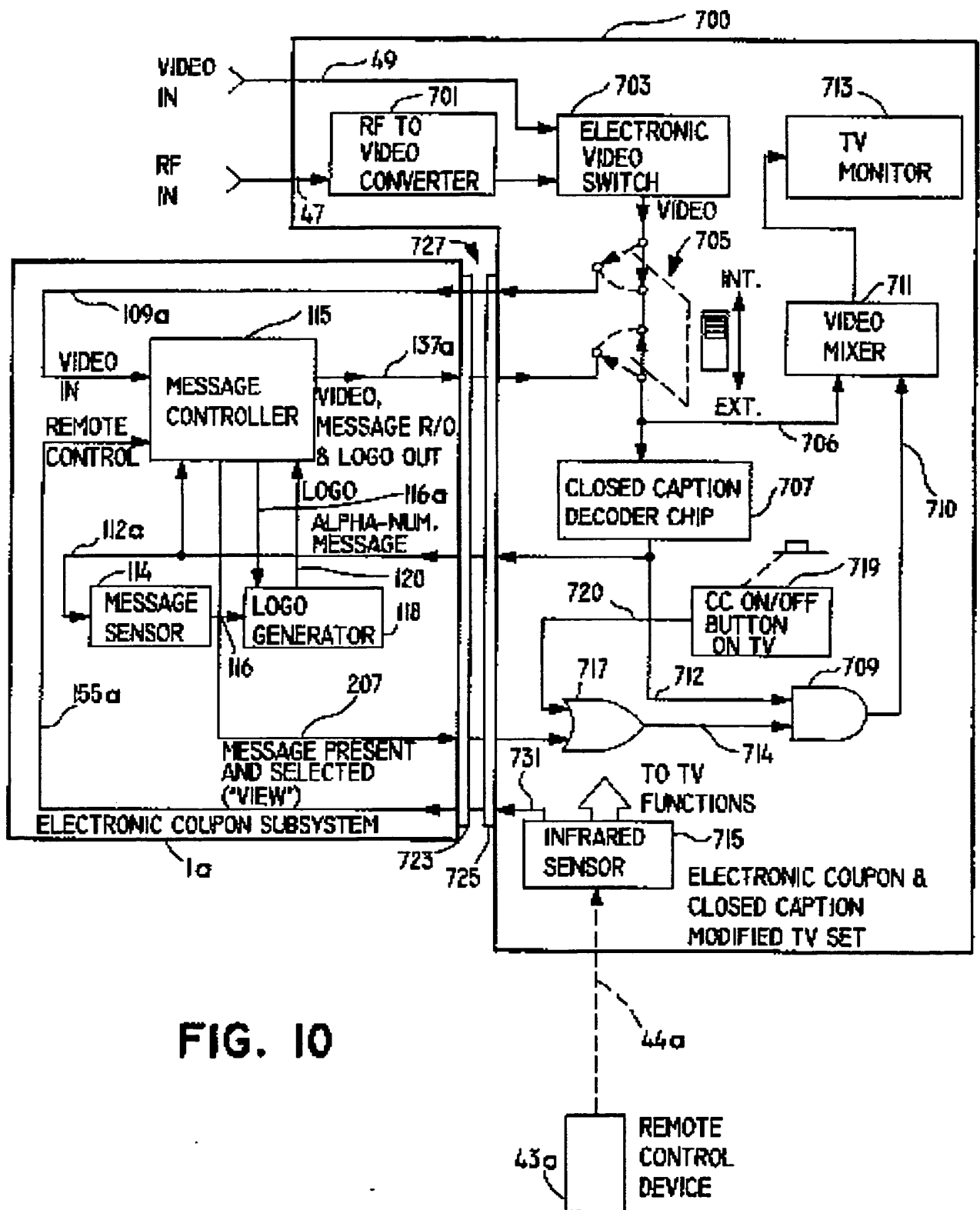


FIG. 10

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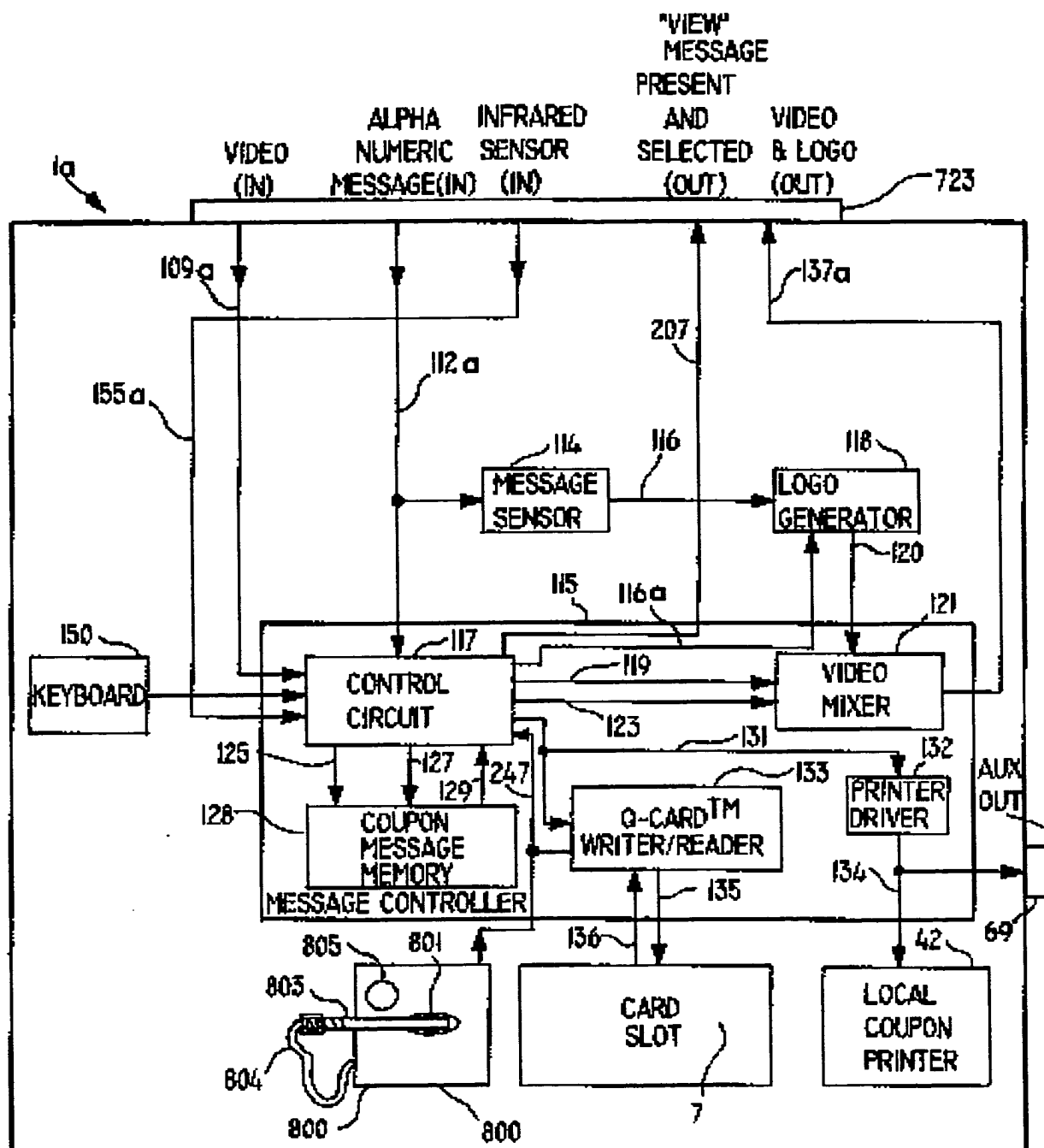


FIG. II



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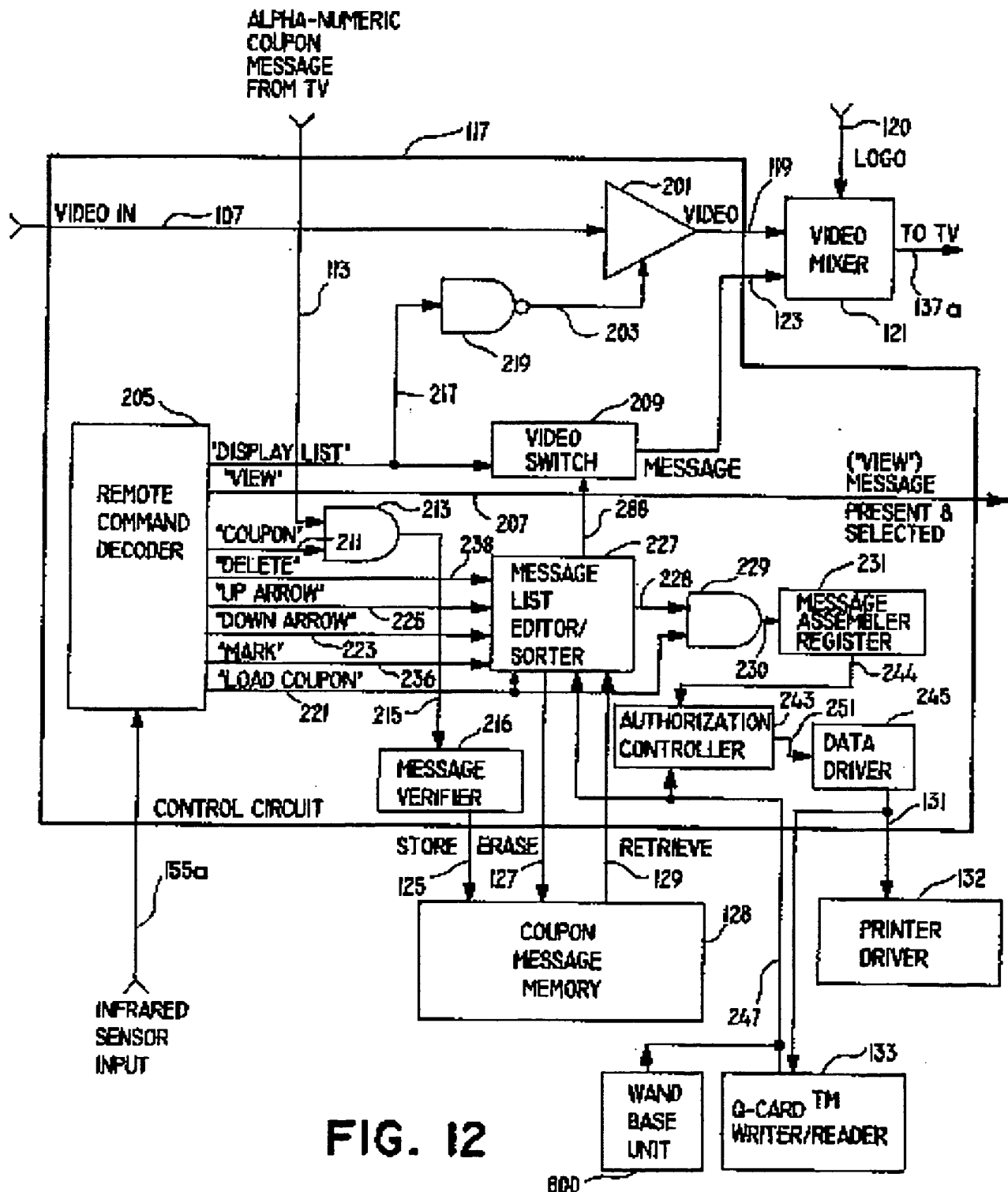


FIG. 12

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